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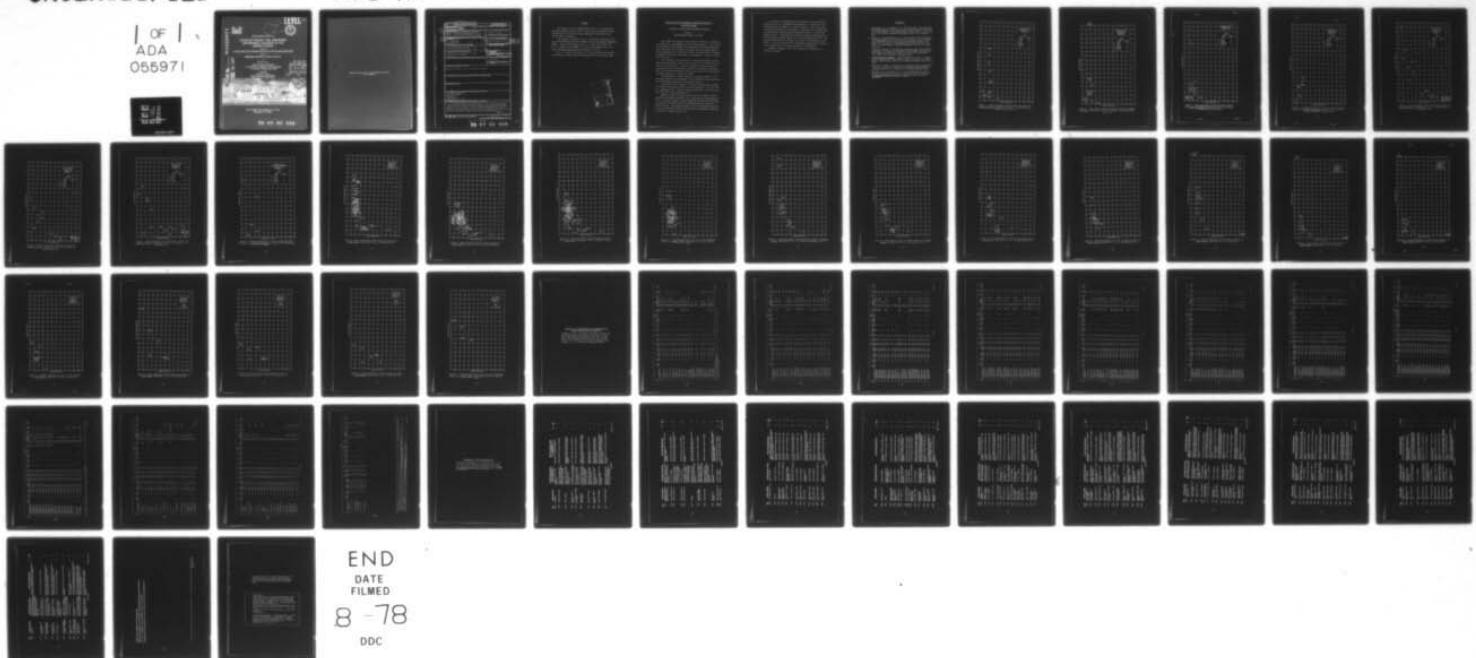
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STATE-OF-THE-ART FOR ASSESSING EARTHQUAKE HAZARDS IN THE UNITED--ETC(U)
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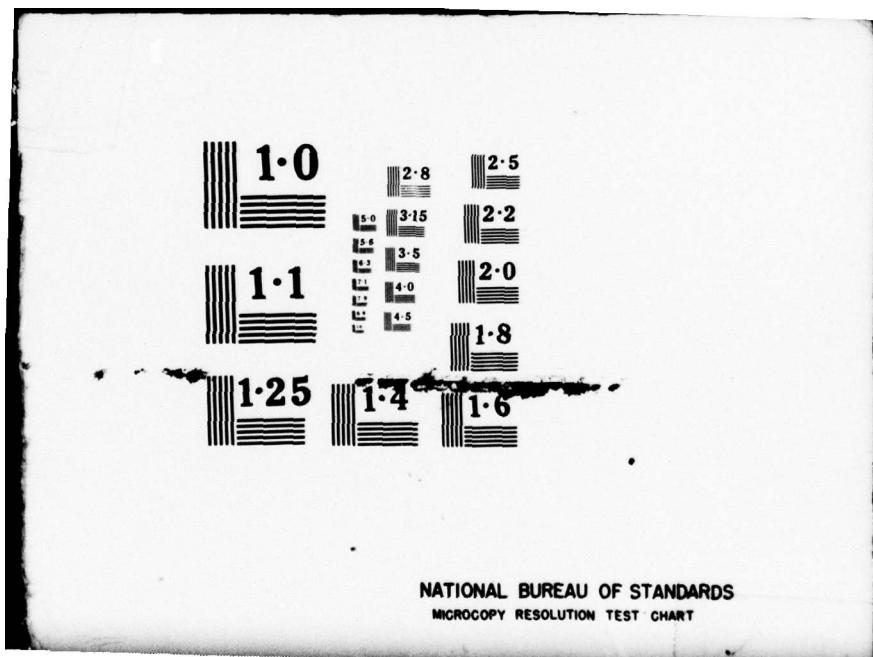
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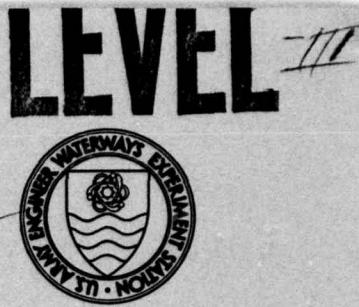


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MISCELLANEOUS PAPER S-73-I

STATE-OF-THE-ART FOR ASSESSING EARTHQUAKE HAZARDS IN THE UNITED STATES

Report 9

CATALOGUE OF STRONG MOTION EARTHQUAKE RECORDS

Volume I

WESTERN UNITED STATES, 1933-1971

by

Frank K. Chang

Soils and Pavements Laboratory

U. S. Army Engineer Waterways Experiment Station
P. O. Box 631, Vicksburg, Miss. 39180

April 1978

Report 9 of a Series

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) A working catalogue was prepared to facilitate the selection of strong motion earthquake records for design purposes. The records are those processed by the California Institute of Technology from western United States during the period 1933-1971. They are presented graphically in terms of magnitude, type of fault, focal depth, site classification, peak acceleration, velocity, displacement, duration, and distance from epicenter.		

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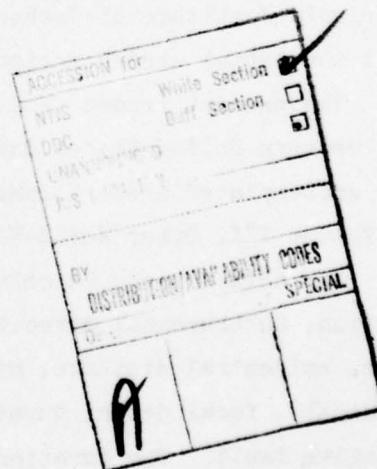
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Preface

This report is part of ongoing work at the U. S. Army Engineer Waterways Experiment Station (WES) in Civil Works Investigation Study: "Methodologies for Selecting Design Earthquakes," sponsored by the Office, Chief of Engineers.

This study is directed by Dr. E. L. Krinitzsky, Engineering Geology and Rock Mechanics Division (EG&RMD), Soils and Pavements Laboratory (S&PL). General direction was by Mr. J. P. Sale, Chief, S&PL, and Mr. D. C. Banks, Chief, EG&RMD. The report was prepared by Mr. F. K. Chang, Earthquake Engineering and Vibrations Division.

COL J. L. Cannon, CE, and Mr. F. R. Brown were Director and Technical Director, respectively, of WES during the period of this study.



STATE-OF-THE-ART FOR ASSESSING EARTHQUAKE HAZARDS IN
THE UNITED STATES

CATALOGUE OF STRONG MOTION EARTHQUAKE RECORDS

Volume I

WESTERN UNITED STATES, 1933-1971

This report was prepared to facilitate the selection of appropriate strong motion earthquake records for design purposes. It is a working catalogue in which groupings of earthquakes were made according to their magnitude, type of fault, focal depth, and site classification. For each category, the records are shown by peak acceleration, velocity, displacement, duration, and distance from epicenter. Figures 1-24 present these data.

It is intended that peak values for design earthquakes will have been determined earlier either by use of Report 7¹ and Report 8² of this series, or by other means. Figures 1-24 then provide an easy-to-use presentation of what strong motion records are available in each category. The records would then be selected for either direct utilization in dynamic analyses or rescaling as needed.

The presentation of peak values is by catalogue numbers of the California Institute of Technology³ (CIT) uniformly processed data from which the actual strong motion records were obtained.

The present report (Volume I) concerns the strong motion records from western United States during the period 1933-1971. The other volumes contemplated are: Volume II, Western Hemisphere, 1972 to present; and Volume III, Other World-Wide Data.

Appendix A lists in columns 1-16 the CIT file numbers, station location, instrumental direction, site classification, peak ground motions, epicentral distance, Richter magnitude, MM intensity (epicentral and local), focal depth, duration, predominant period, and type of causative fault. The duration (column 12) is the "bracketed duration" or the time interval between the first and last acceleration peaks that is equal to or greater than 0.05 g.

To compile the predominant periods (column 13), three different sources were used, as designated by subcolumns 1-3. Subcolumn 1 was calculated from the formula $T = 2\pi(V/a)$, where V and a are peak velocity and acceleration, respectively. Subcolumn 2 was obtained from the publications, "United States Earthquakes" by the U. S. Coast and Geodetic Survey.⁴ Subcolumn 3 was determined from the maximum value of the acceleration response spectra and its corresponding period.^{2,5} The periods calculated by the formula $T = 2\pi(V/a)$ do not agree with the others. Of the three sources, the predominant period values in subcolumn 3, adopted from the response spectra, are recommended.

Appendix B summarizes the site conditions as determined by Trifunac and Brady.⁶

References

1. Krinitzsky, E. L. and Chang, F. K., "State-of-the-Art for Assessing Earthquake Hazards in the United States; Specifying Peak Motions for Design Earthquakes," *Miscellaneous Paper S-73-1, Report 7*, Jan 1978, U. S. Army Engineer Waterways Experiment Station, CE, Vicksburg, Miss.
2. Chang, F. K. and Krinitzsky, E. L. "State-of-the-Art for Assessing Earthquake Hazards in the United States; Duration, Spectral Content, and Predominant Period of Strong Motion Earthquake Records from Western United States," *Miscellaneous Paper S-73-1, Report 8*, Jan 1978, U. S. Army Engineer Waterways Experiment Station, CE, Vicksburg, Miss.
3. California Institute of Technology, Earthquake Engineering Research Laboratory, "Strong Motion Earthquake Accelerograms; Corrected Accelerograms and Integrated Ground Velocities and Displacements," Vol 2, Parts A-Y, 1971-1975, Pasadena, Calif.
4. United States Earthquakes. Annual publication of the U. S. Department of Commerce, Coast and Geodetic Survey, 1933-1968; the NOAA National Ocean Survey, 1969; and the NOAA Environmental Data Service, 1970.
5. California Institute of Technology, Earthquake Engineering Research Laboratory, "Analyses of Strong Motion Earthquake Accelerograms; Response Spectra," Vol 3, Parts A-Y, 1973-1975, Pasadena, Calif.
6. Trifunac, M. D. and Brady, A. G., "On the Correlation of Seismic Intensity Scales with the Peaks of Recorded Strong Ground Motion," Bulletin, Seismological Society of America, Vol 65, Feb 1975, pp 139-162.

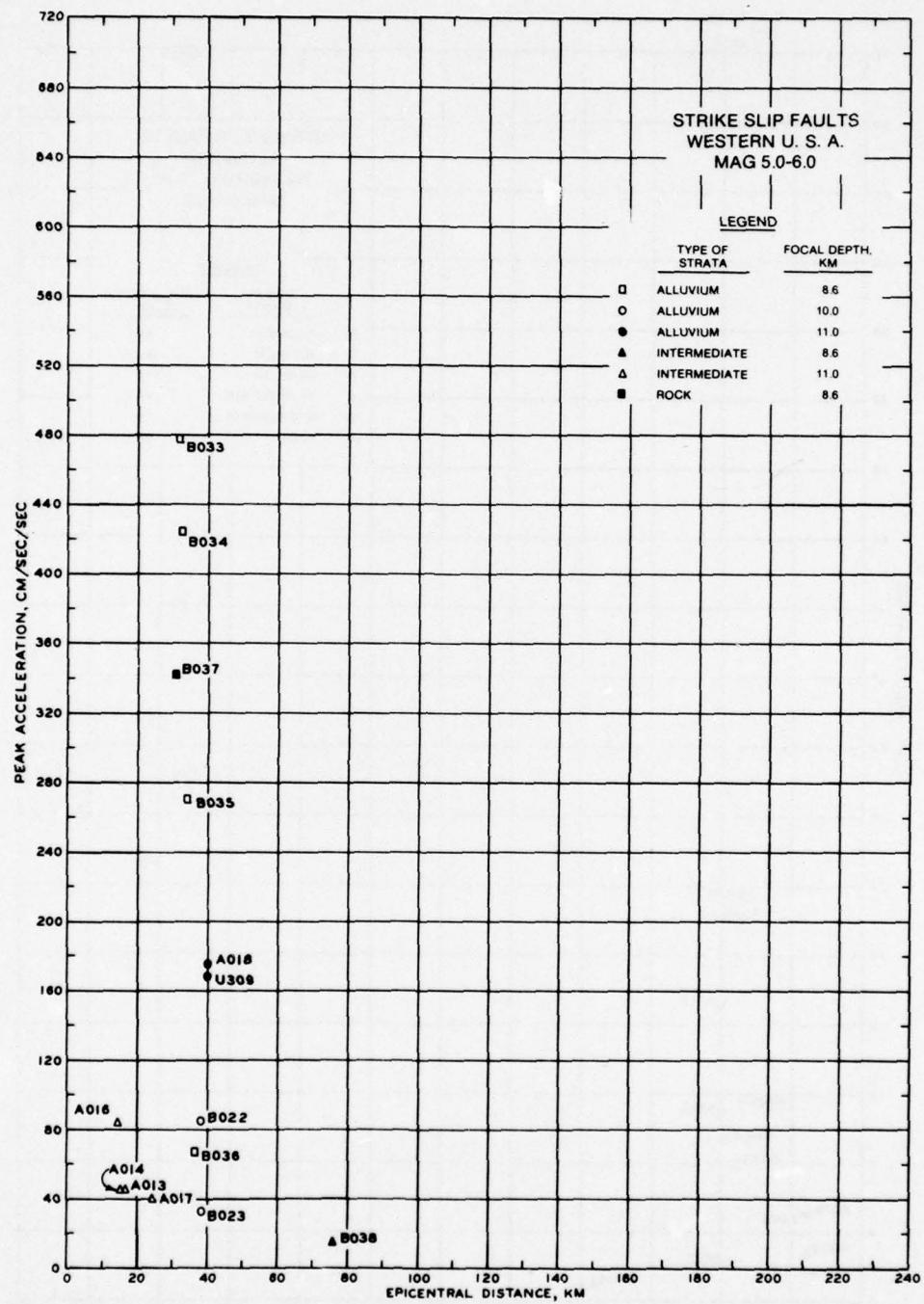


Figure 1. Peak acceleration versus epicentral distance for strike-slip faults, magnitudes 5.0-6.0, in alluvial, intermediate and rock sites

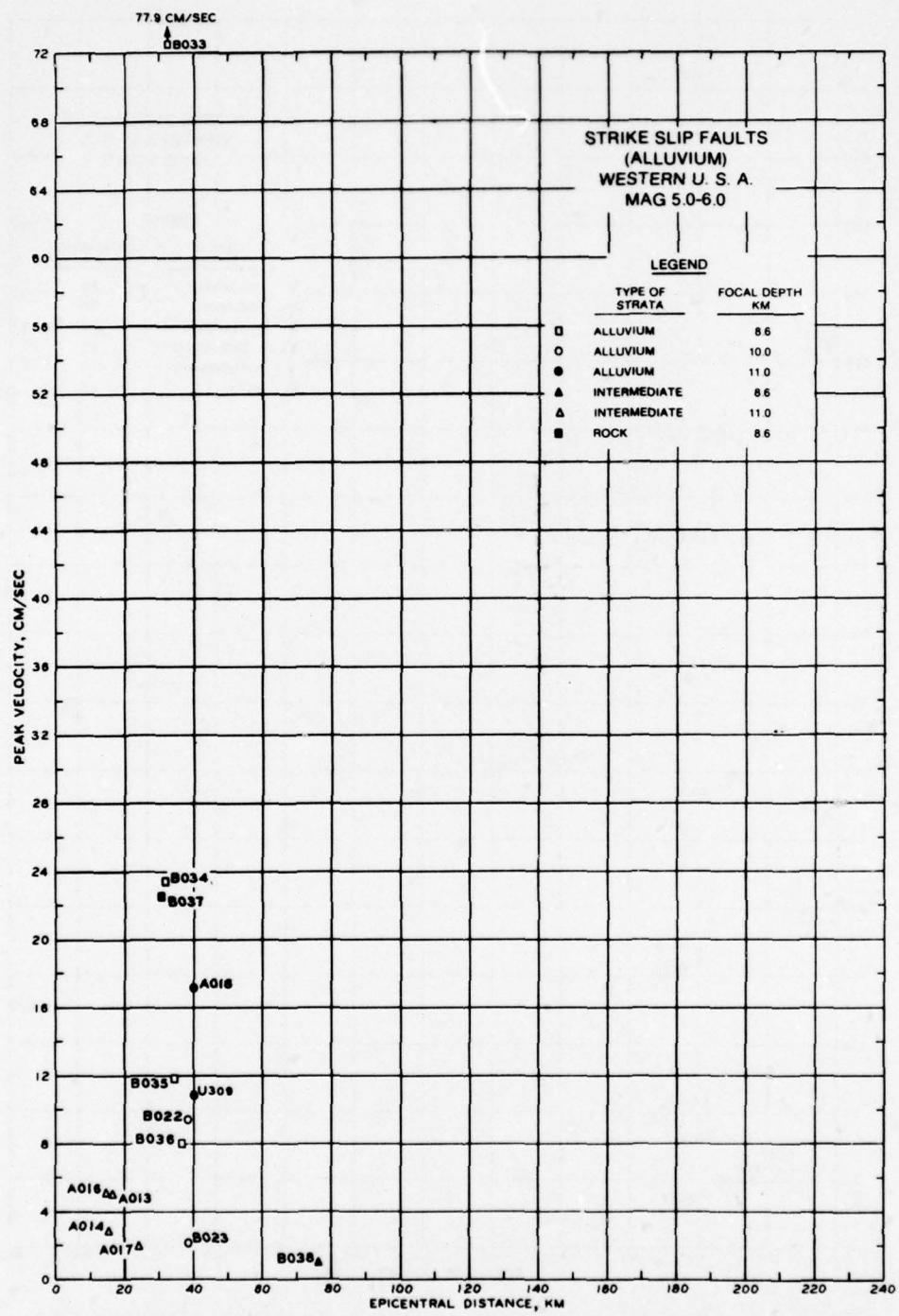


Figure 2. Peak velocity versus epicentral distance for strike-slip fault, magnitudes 5.0-6.0, in alluvial, intermediate and rock sites

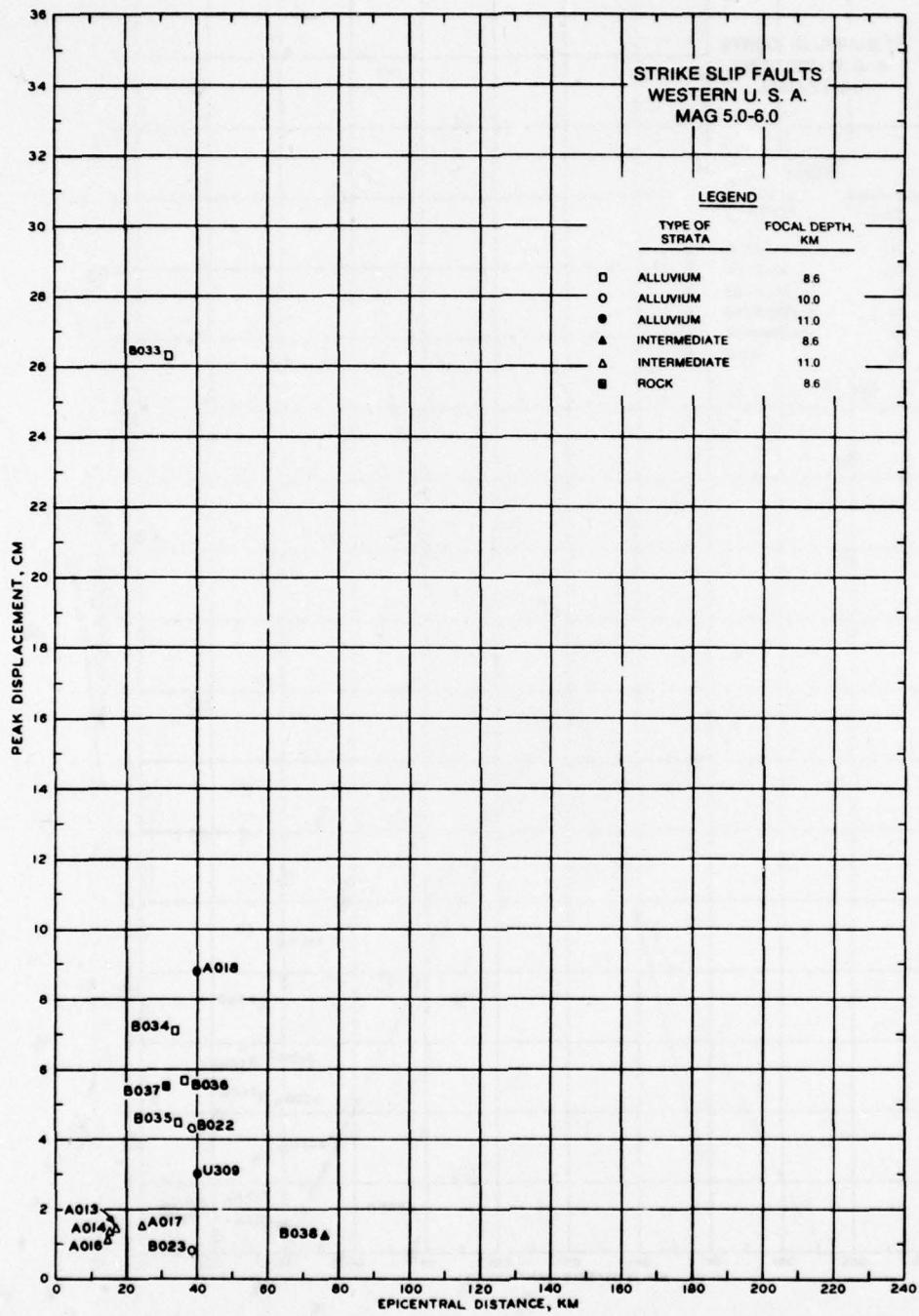


Figure 3. Peak displacement versus epicentral distance for strike-slip fault, magnitudes 5.0-6.0, in alluvial, intermediate and rock sites

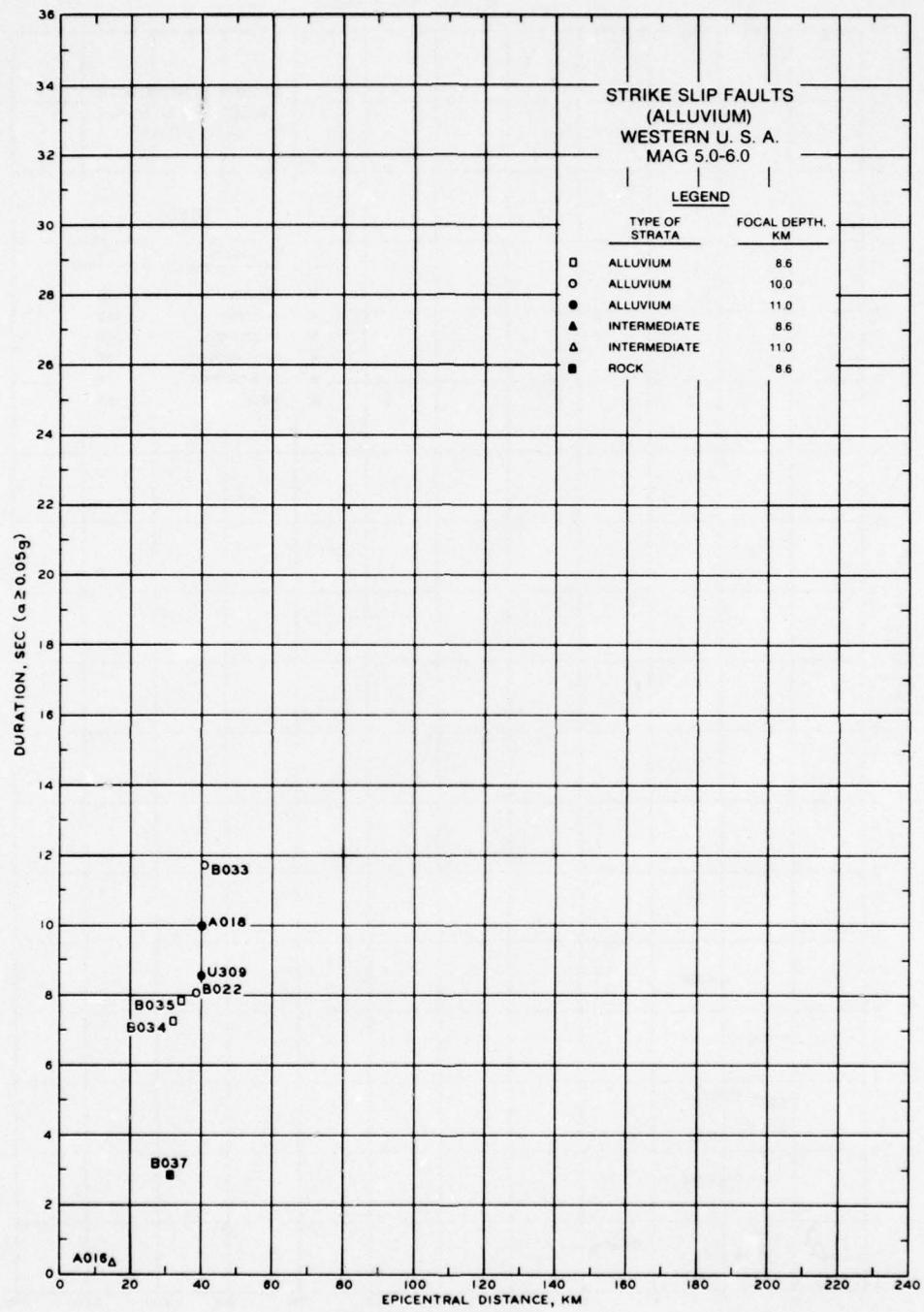


Figure 4. Bracketed duration ($a \geq 0.05 g$) versus epicentral distance for strike-slip faults, magnitudes 5.0-6.0, in alluvial, intermediate and rock sites

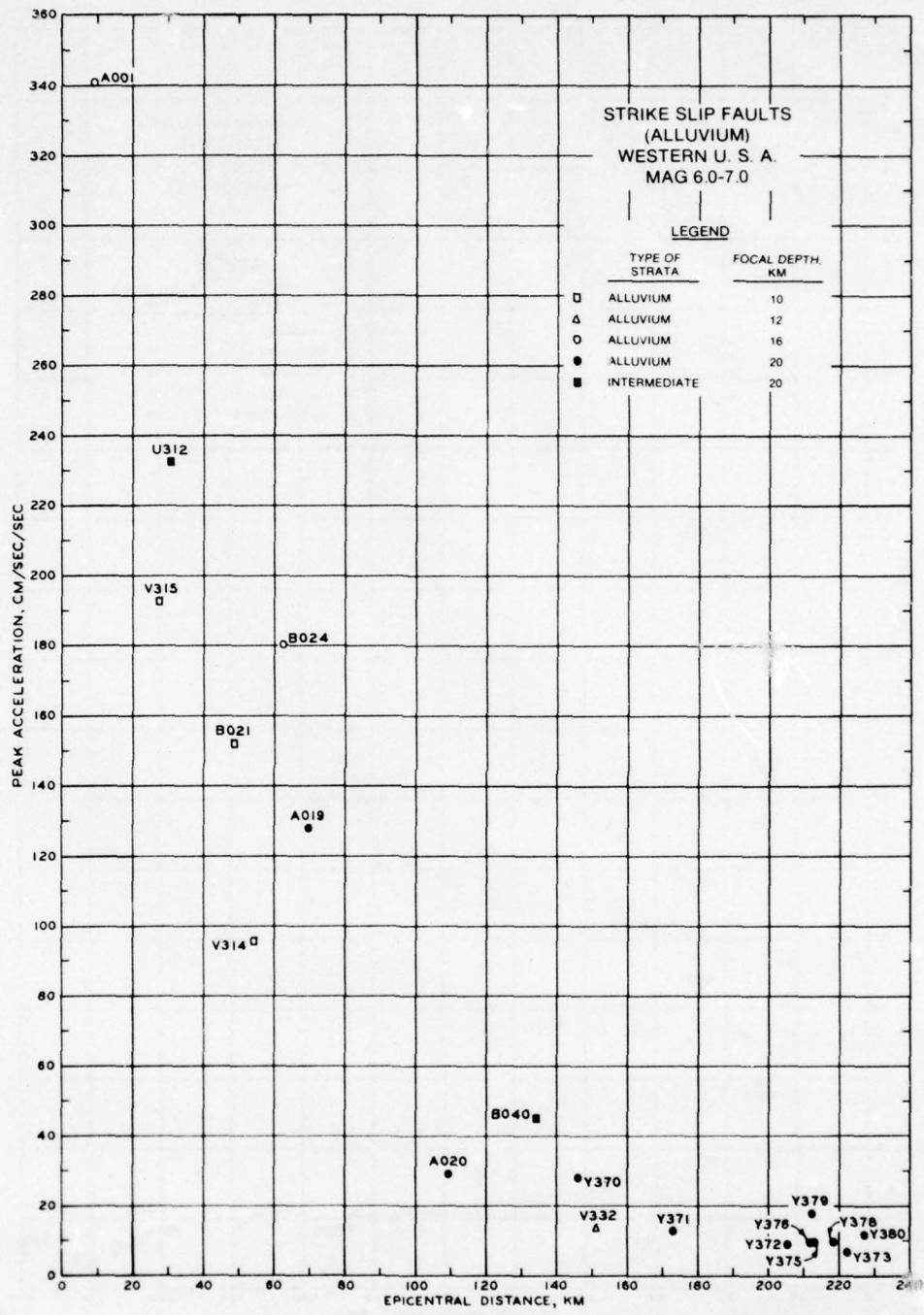


Figure 5. Peak acceleration versus epicentral distance for strike-slip faults, magnitudes 6.0-7.0, in alluvial and intermediate sites

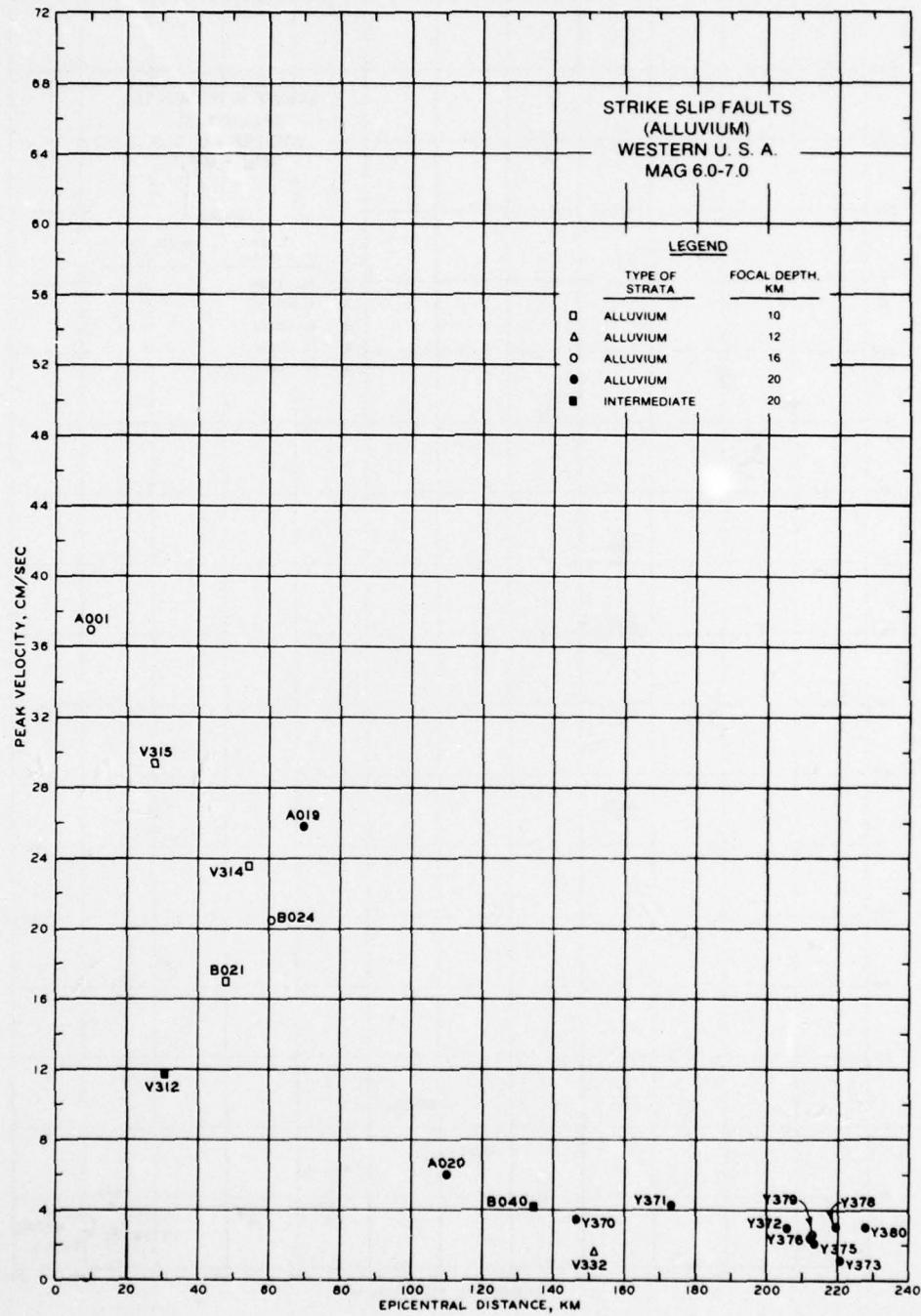


Figure 6. Peak velocity versus epicentral distance for strike-slip faults, magnitudes 6.0-7.0, in alluvial and intermediate sites

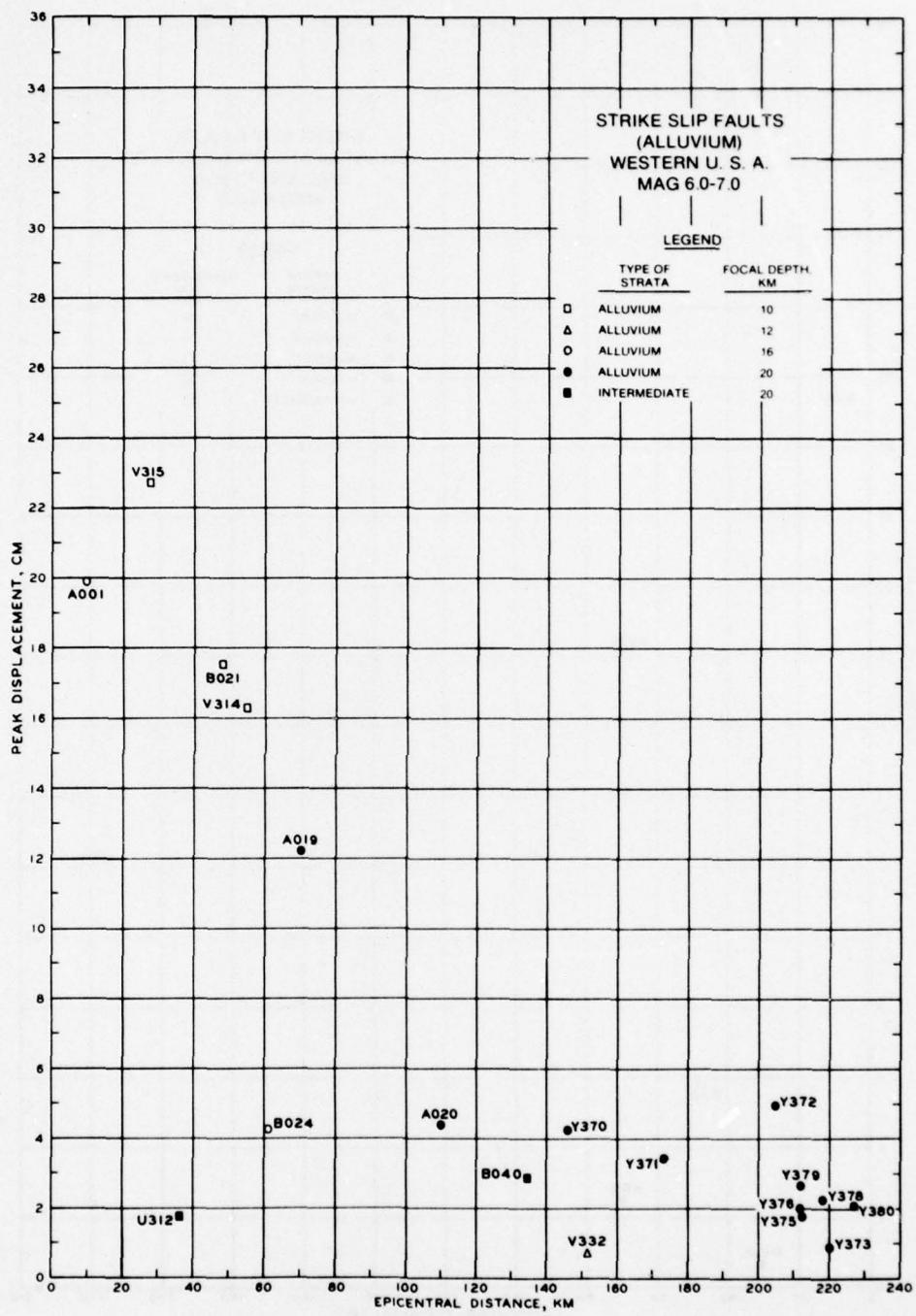


Figure 7. Peak displacement versus epicentral distance for strike-slip faults, magnitudes 6.0-7.0, in alluvial and intermediate sites

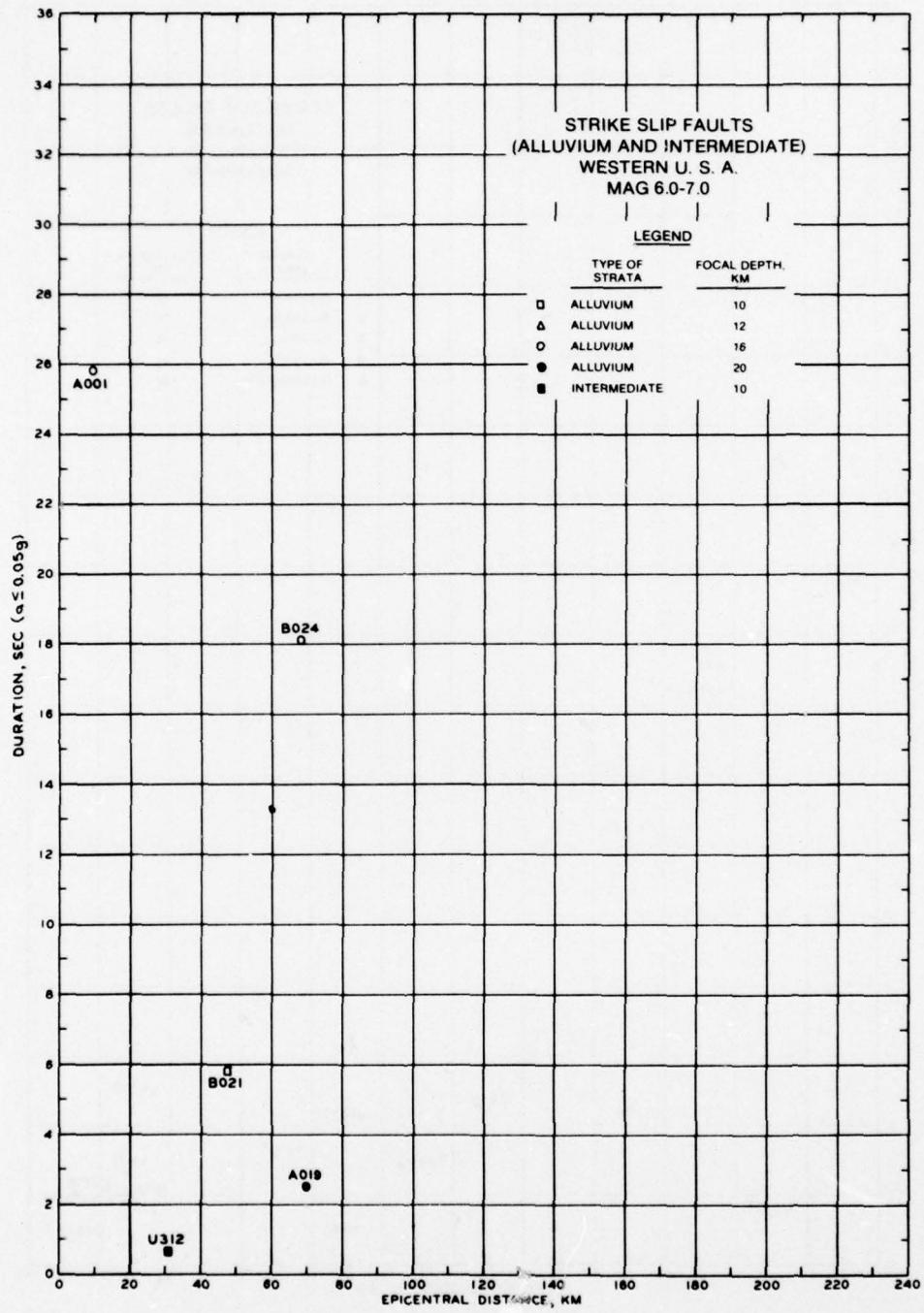


Figure 8. Bracketed duration ($a \geq 0.05 g$) versus epicentral distance for strike-slip faults, in alluvial and intermediate sites

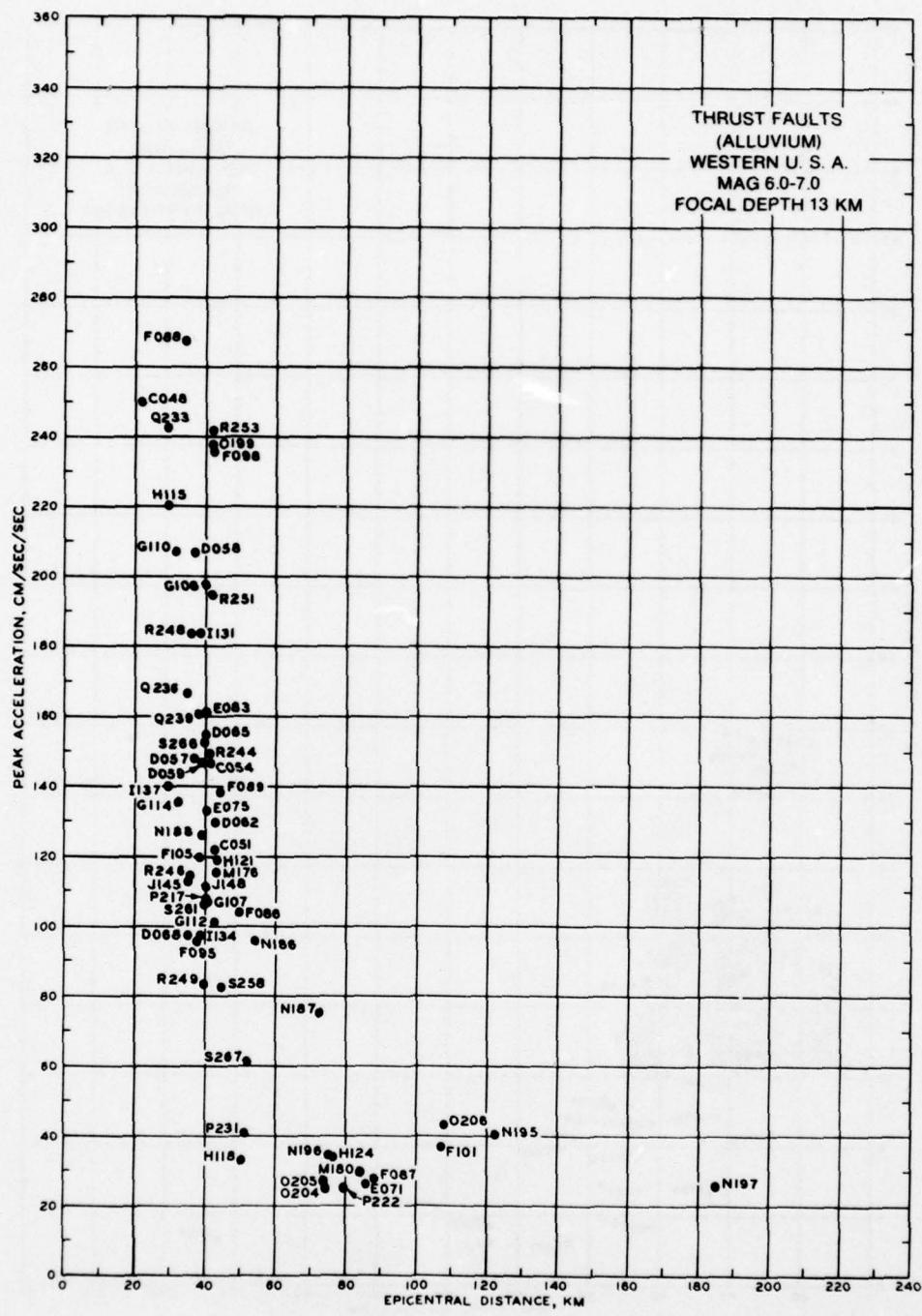


Figure 9. Peak acceleration versus epicentral distance for thrust faults, magnitudes 6.0-7.0, in alluvial sites

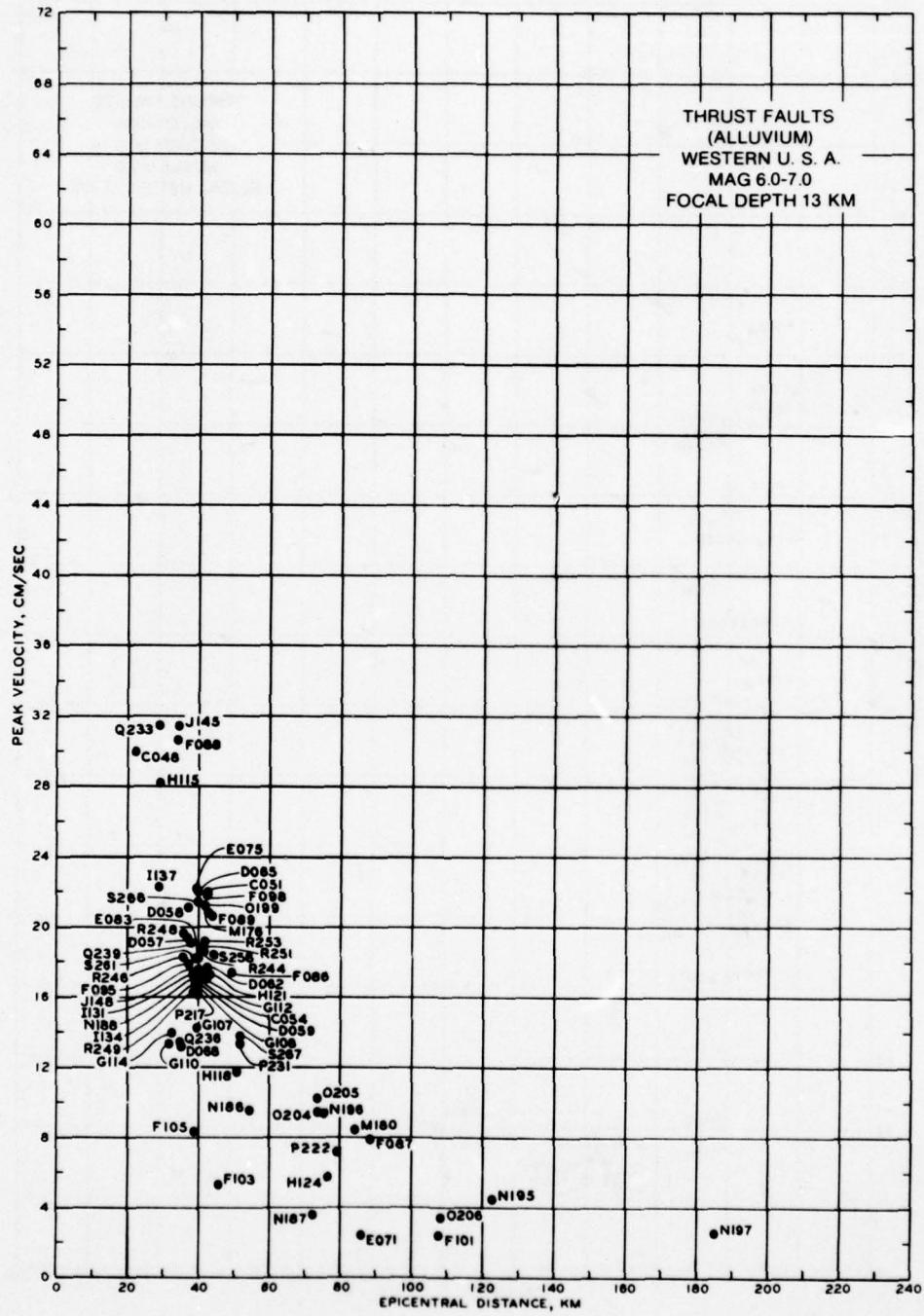
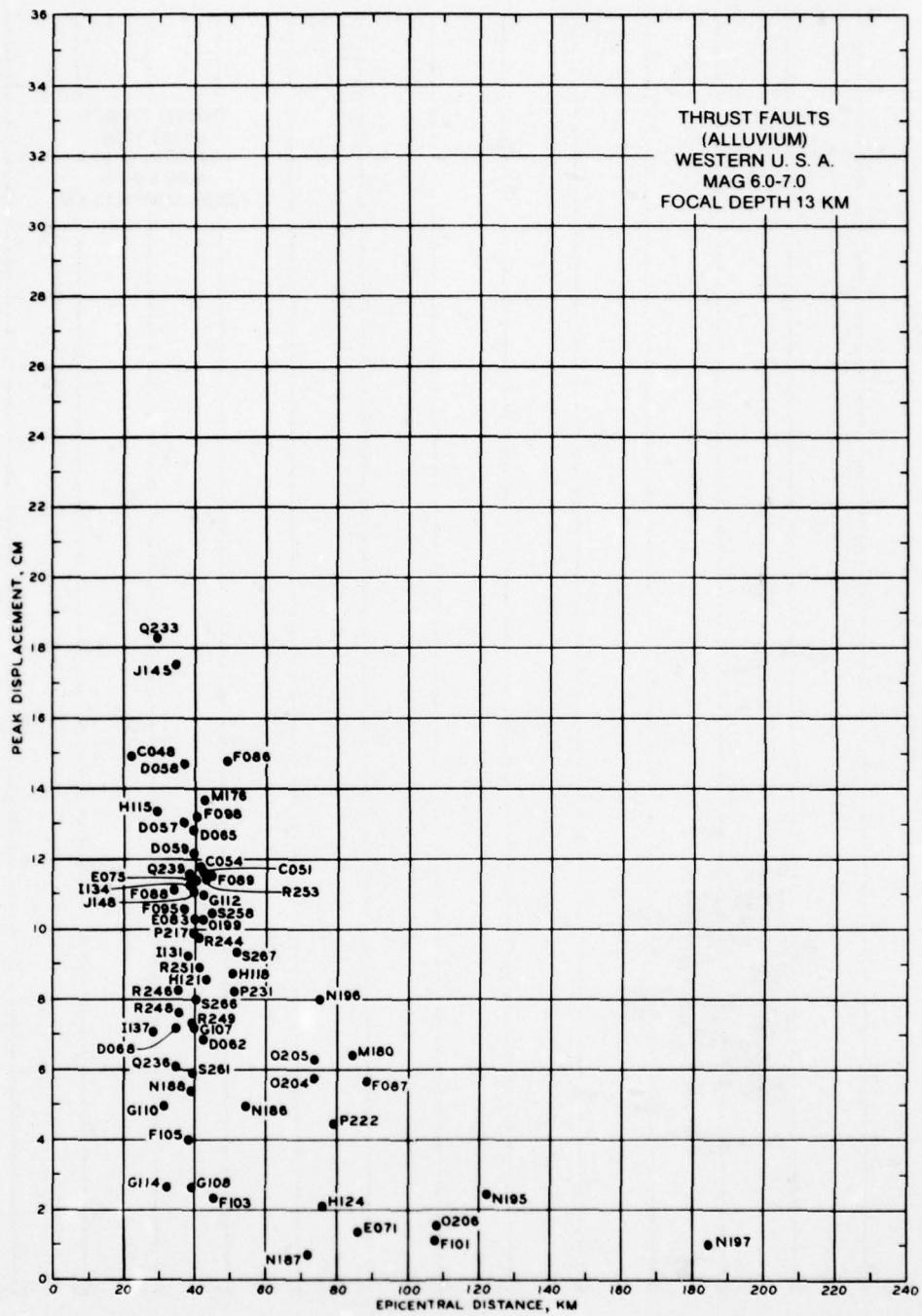


Figure 10. Peak velocity versus epicentral distance for thrust faults, magnitudes 6.0-7.0, in alluvial sites



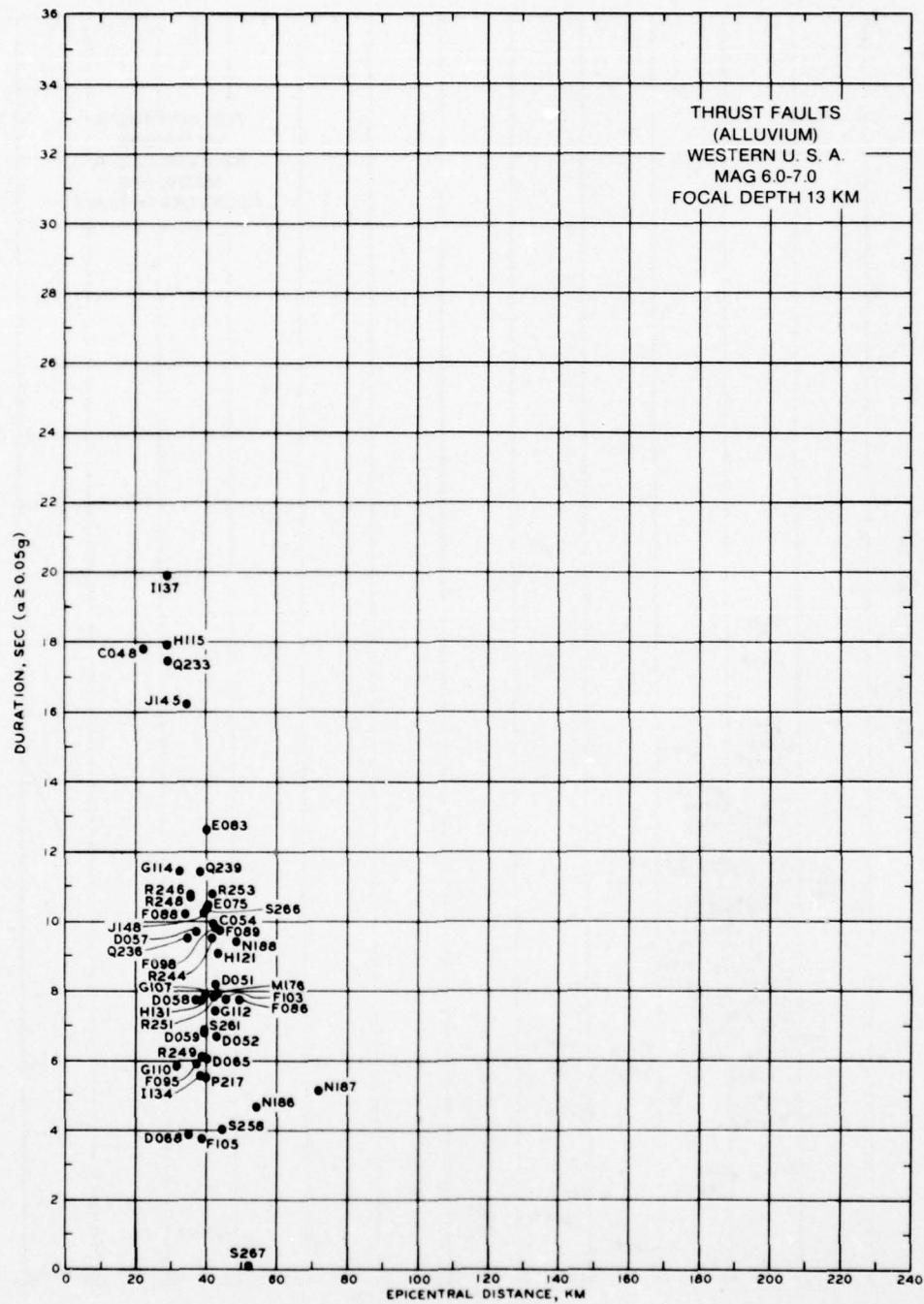


Figure 12. Bracketed duration ($a \geq 0.05 g$) versus epicentral distance for thrust faults, magnitudes 6.0-7.0, in alluvial sites

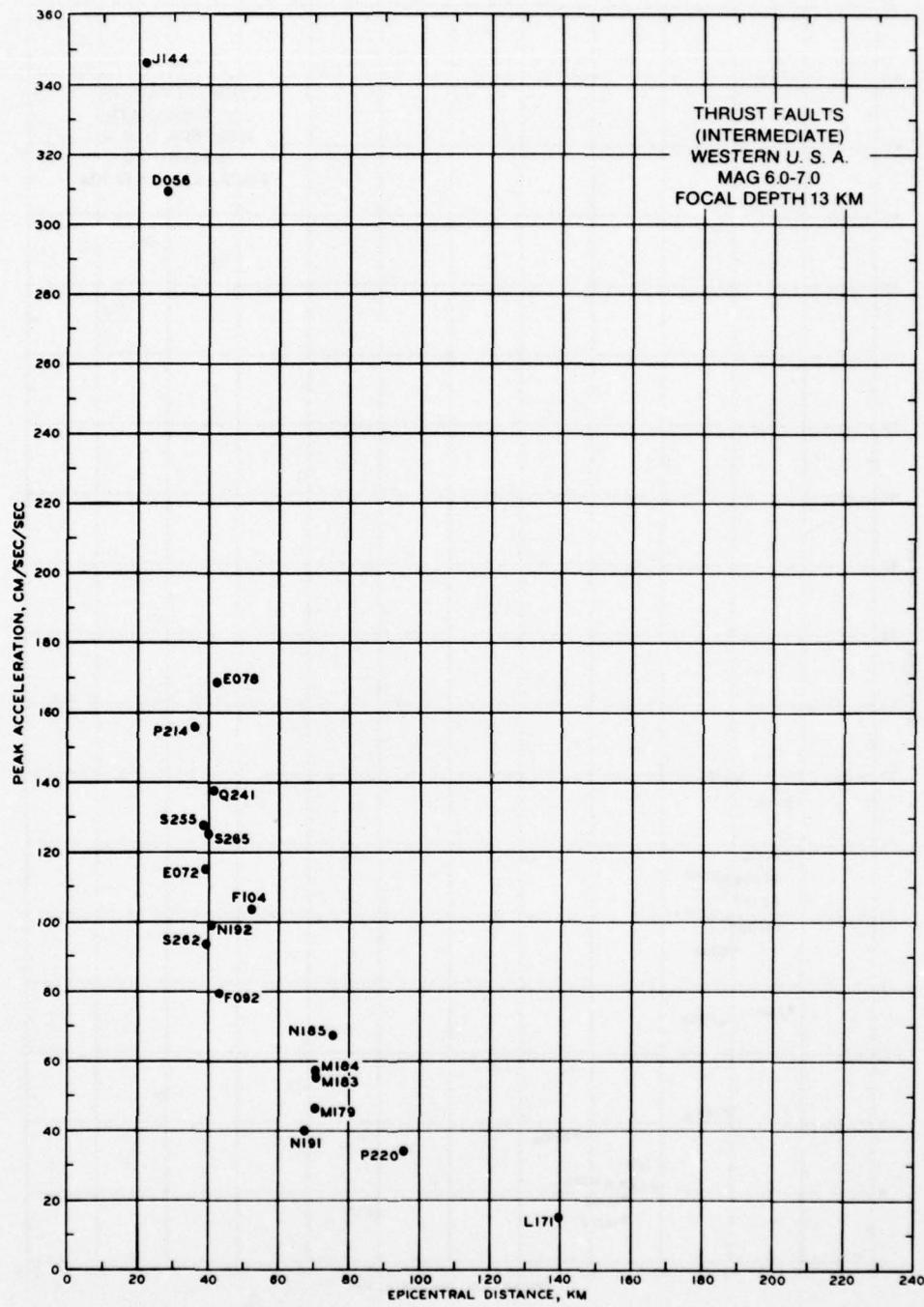


Figure 13. Peak acceleration versus epicentral distance for thrust faults, magnitudes 6.0-7.0, in alluvial intermediate sites

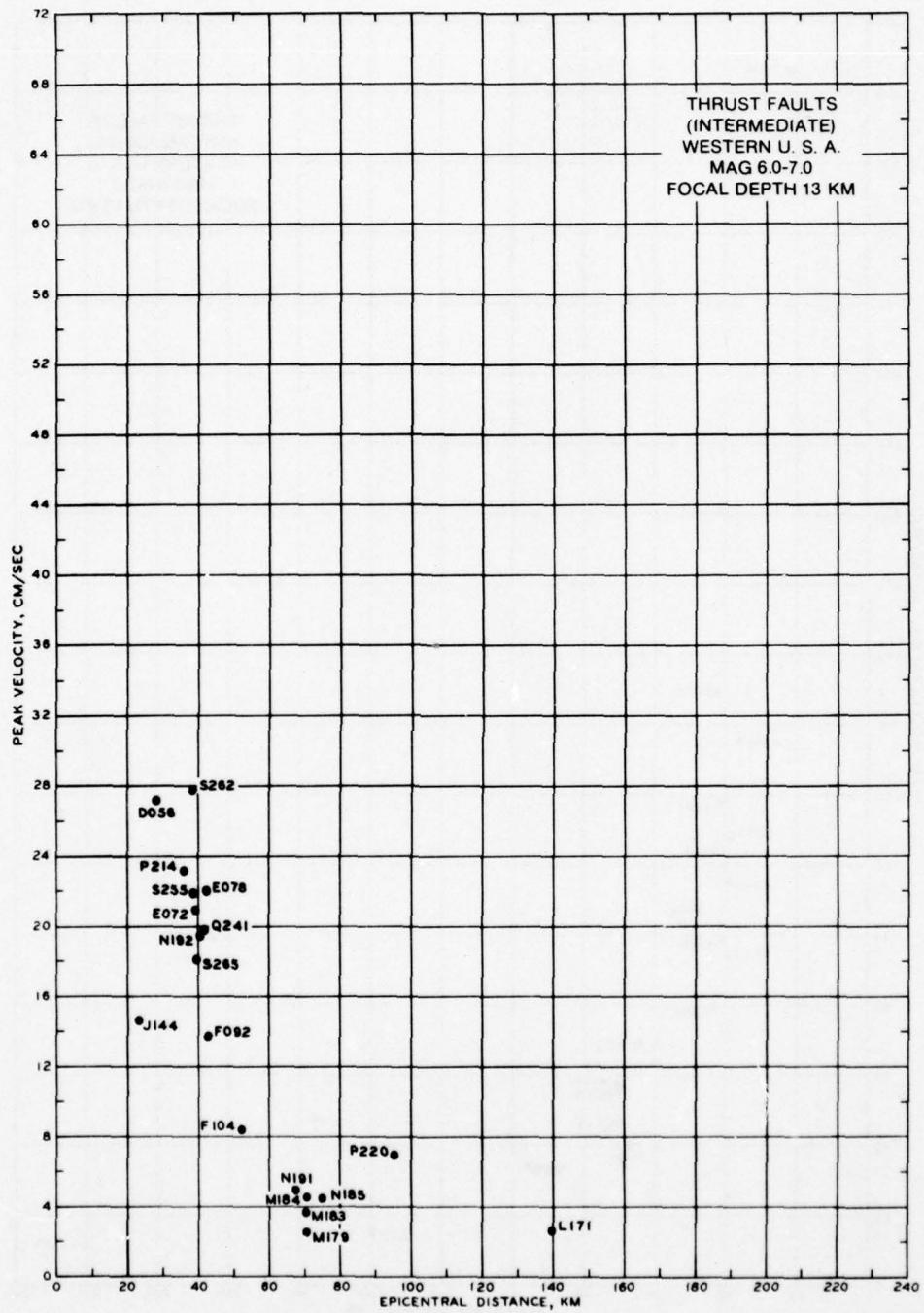


Figure 14. Peak velocity versus epicentral distance for thrust faults, magnitudes 6.0-7.0, in intermediate sites

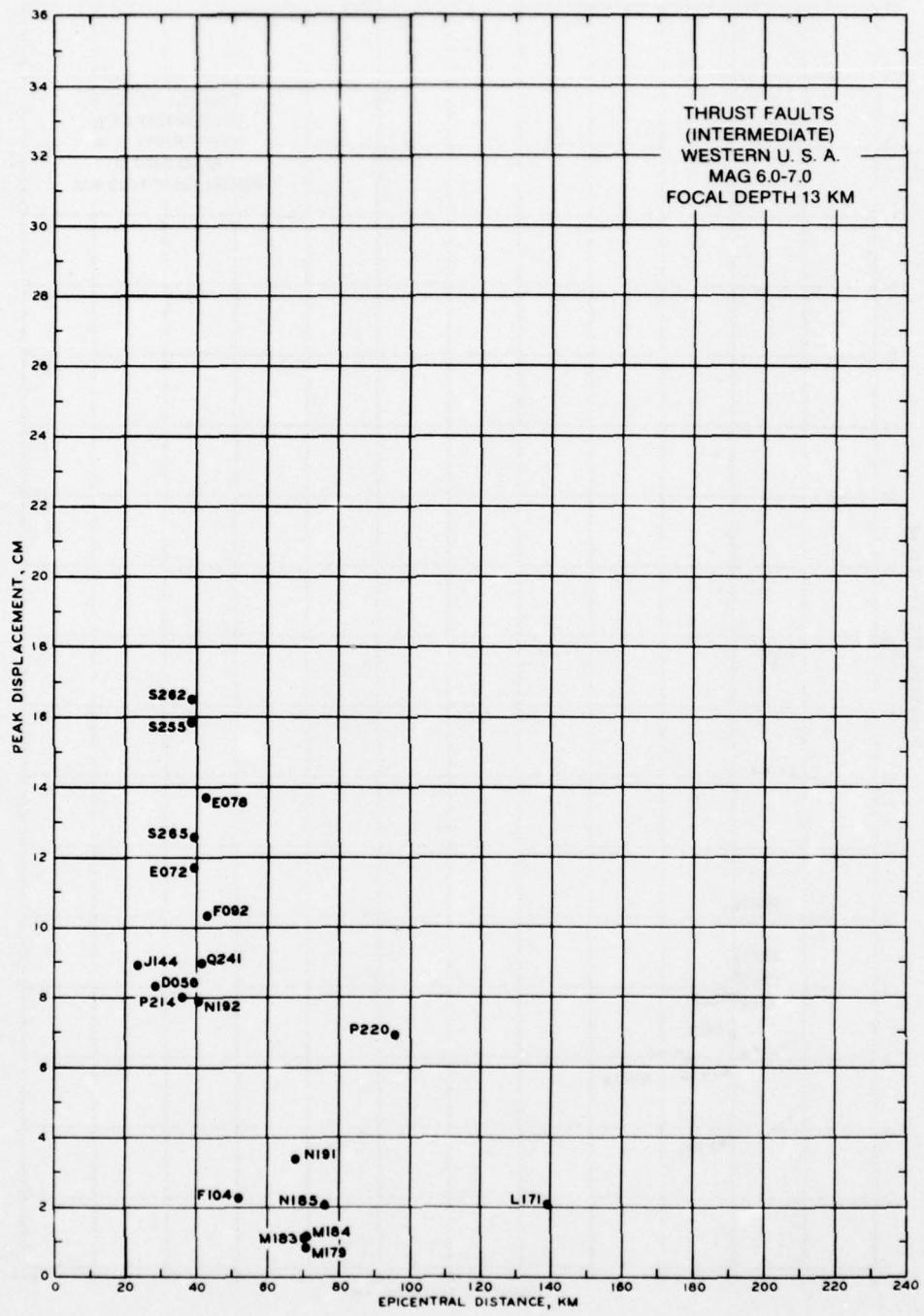


Figure 15. Peak displacement versus epicentral distance for thrust faults, magnitudes 6.0-7.0, in intermediate sites

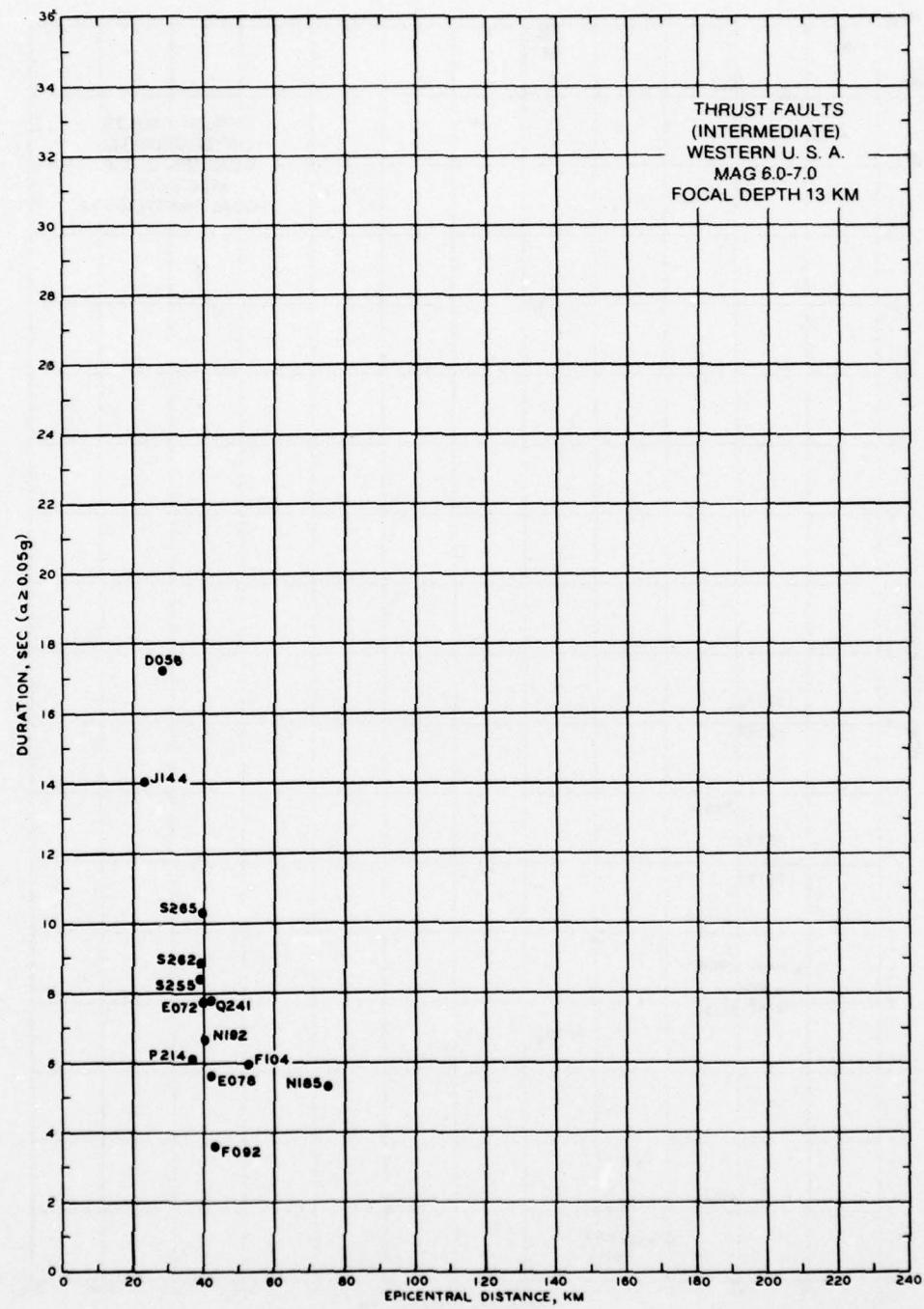


Figure 16. Bracketed duration ($a \geq 0.05 g$) versus distance for thrust faults, magnitudes 6.0-7.0, in intermediate sites

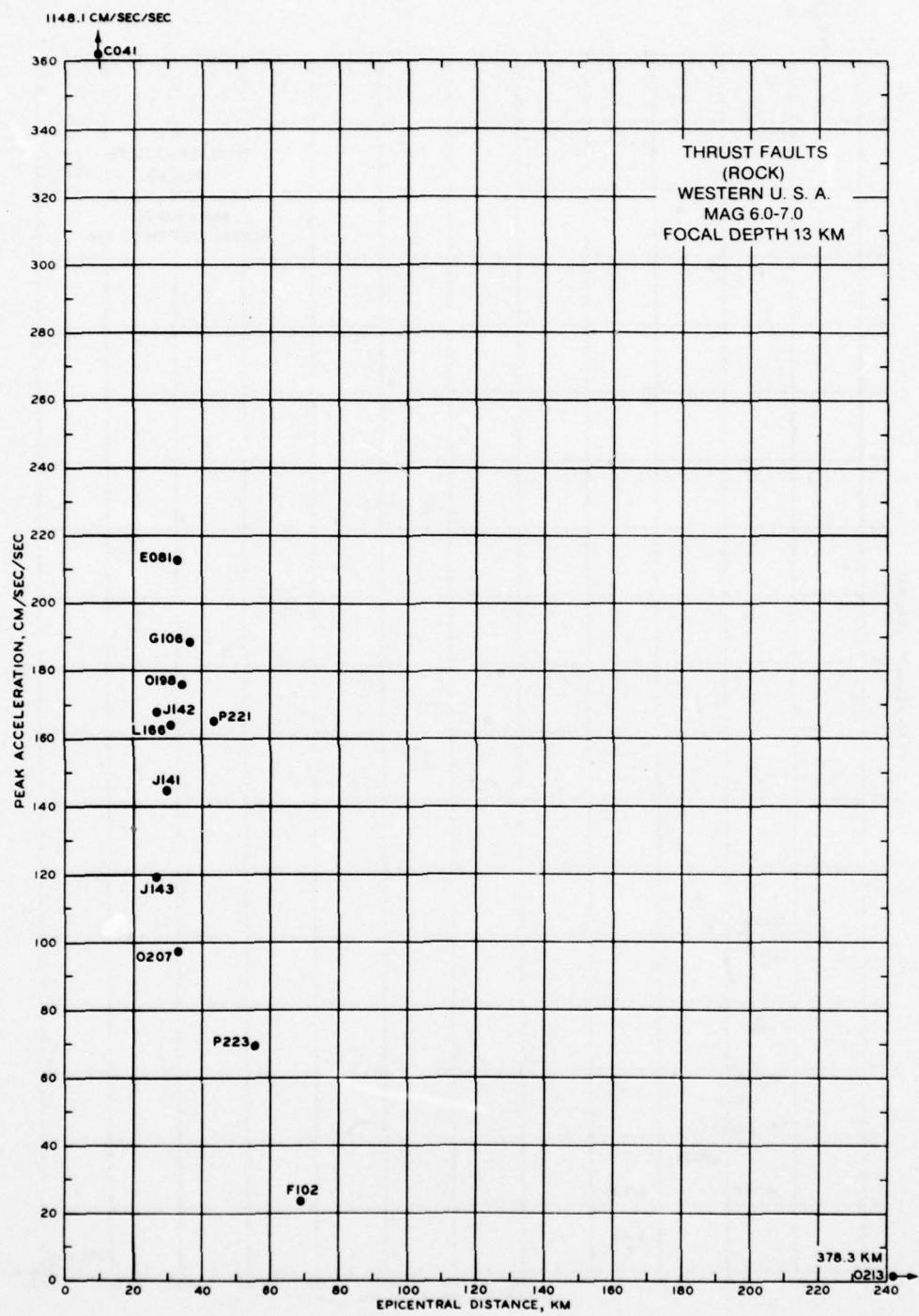


Figure 17. Peak acceleration versus epicentral distance for thrust faults, magnitudes 6.0-7.0, in rock sites

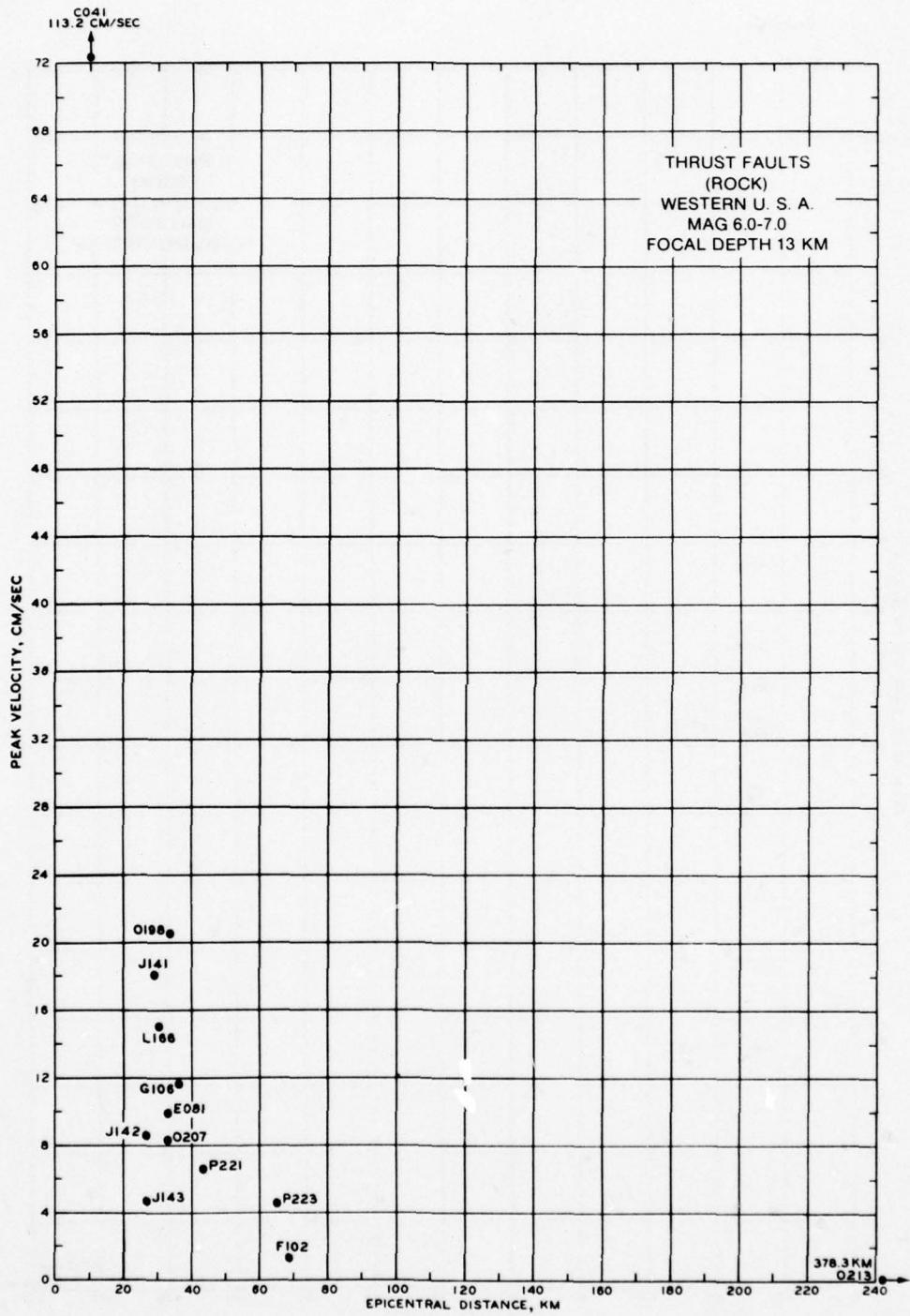


Figure 18. Peak velocity versus epicentral distance for thrust faults, magnitudes 6.0-7.0, in rock sites

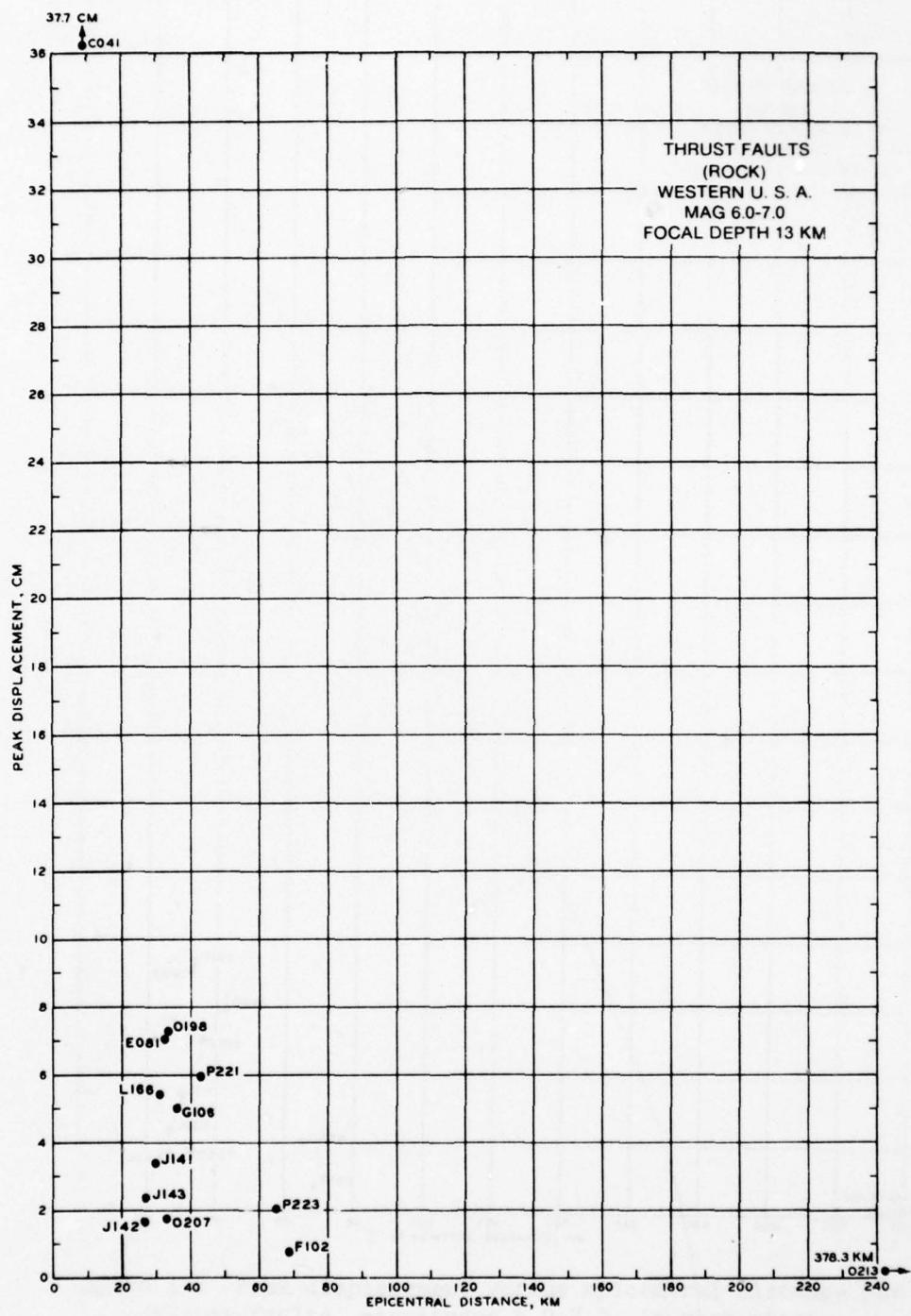


Figure 19. Peak displacement versus epicentral distance for thrust faults, magnitudes 6.0-7.0, in rock sites

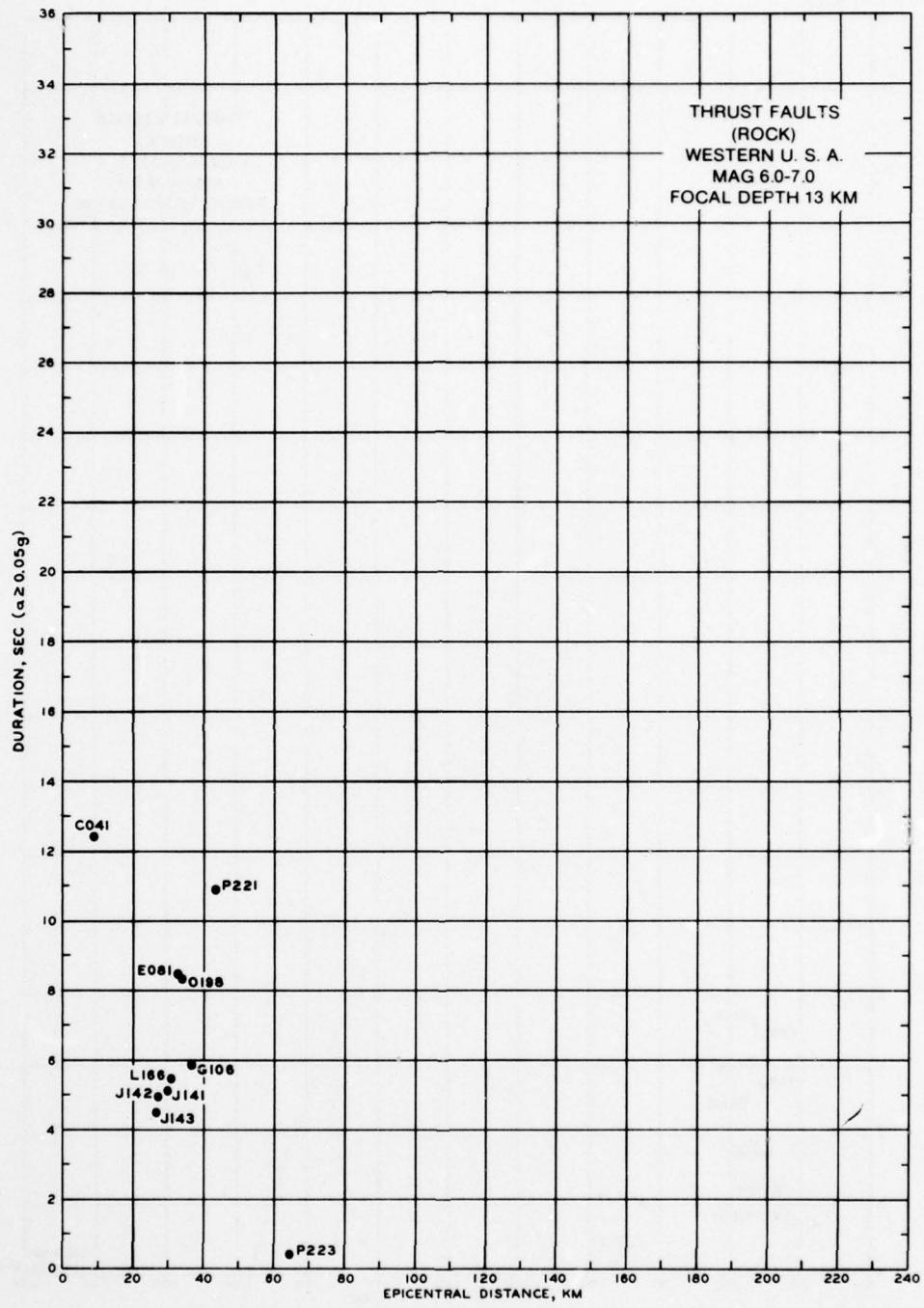


Figure 20. Bracketed duration ($a > 0.05 g$) versus distance for thrust faults, magnitudes 6.0-7.0, in rock sites

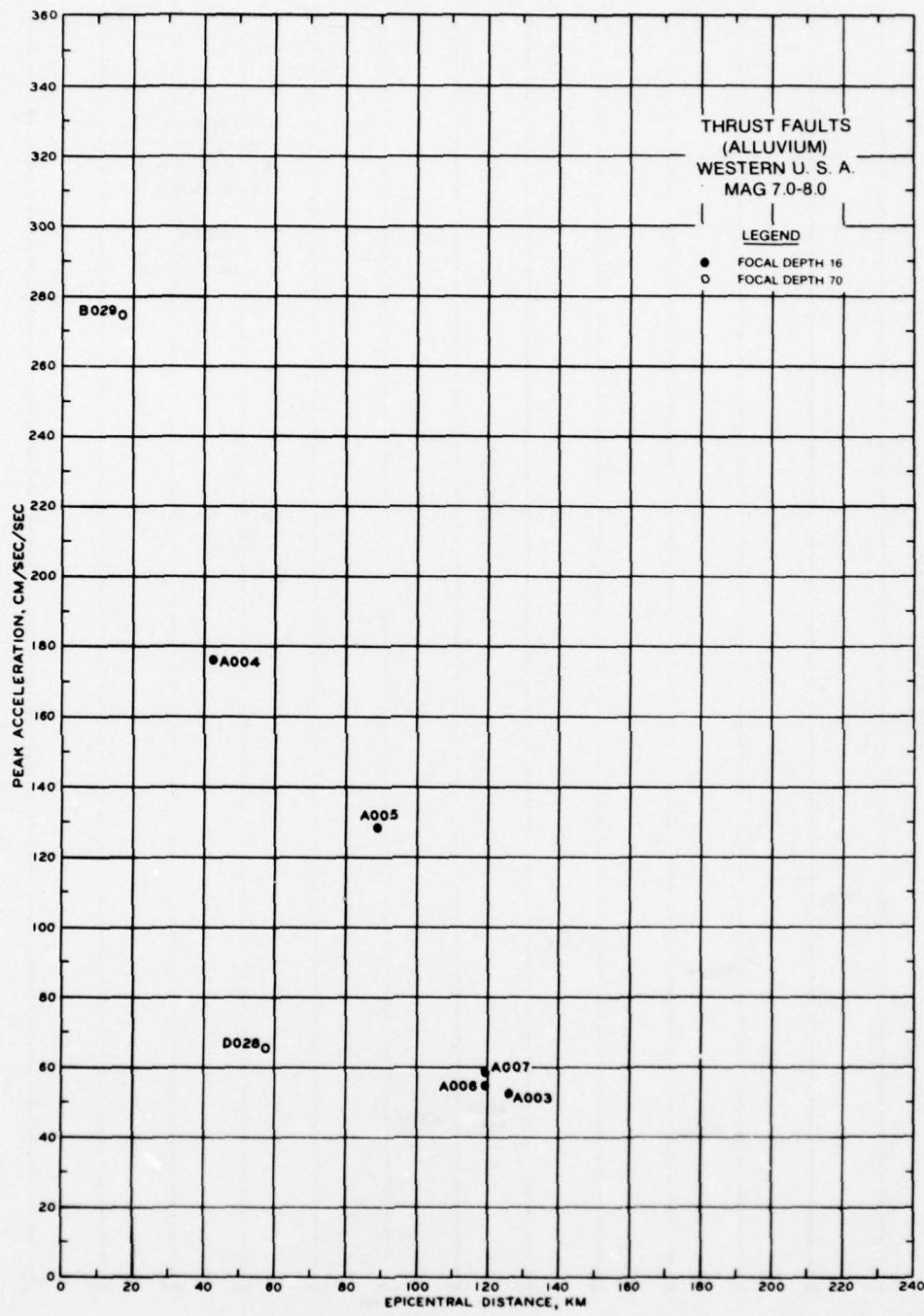


Figure 21. Peak acceleration versus epicentral distance for thrust faults, magnitudes 7.0-8.0, in alluvial sites

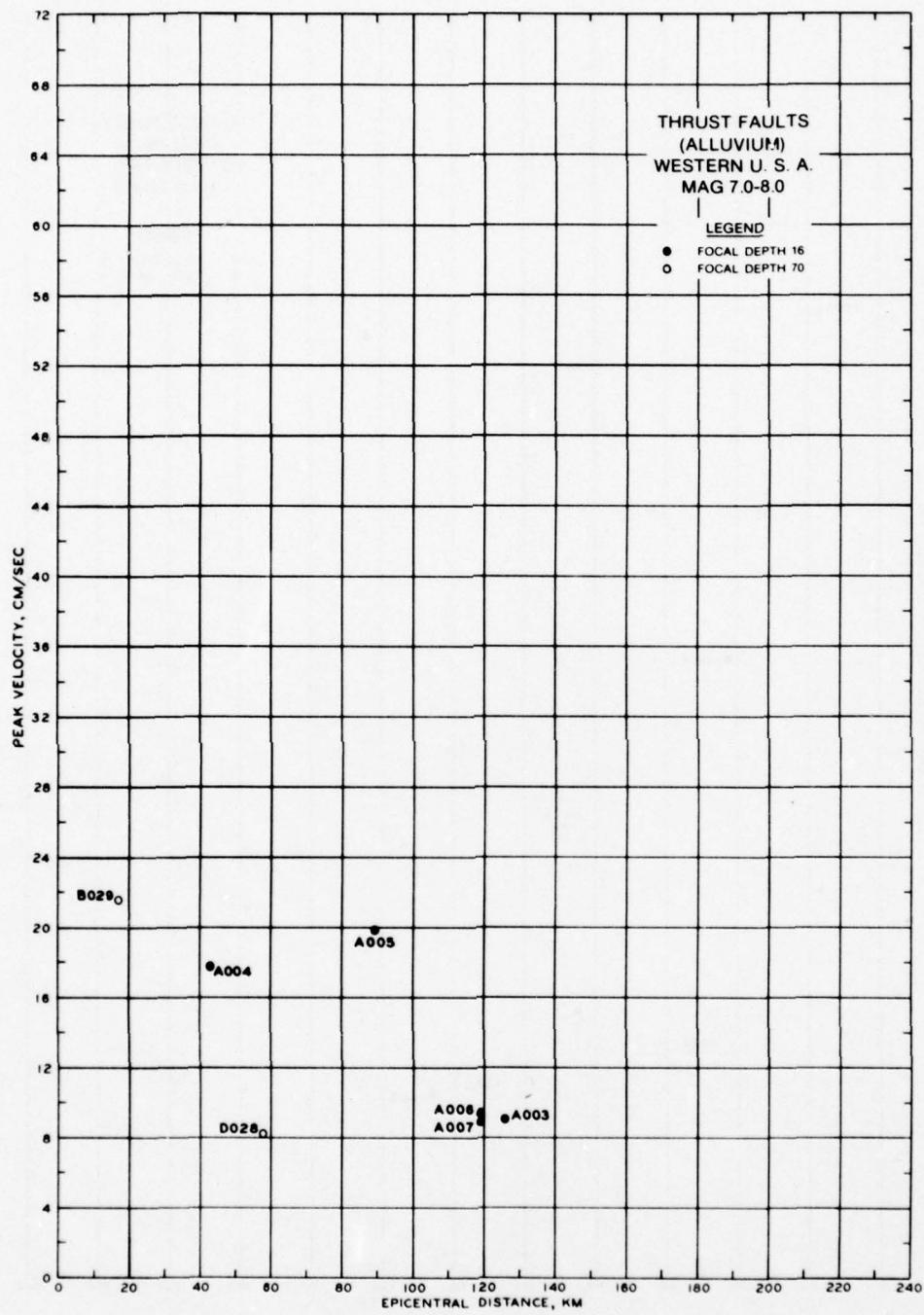


Figure 22. Peak velocity versus epicentral distance for thrust faults, magnitudes 7.0-8.0, in alluvial sites

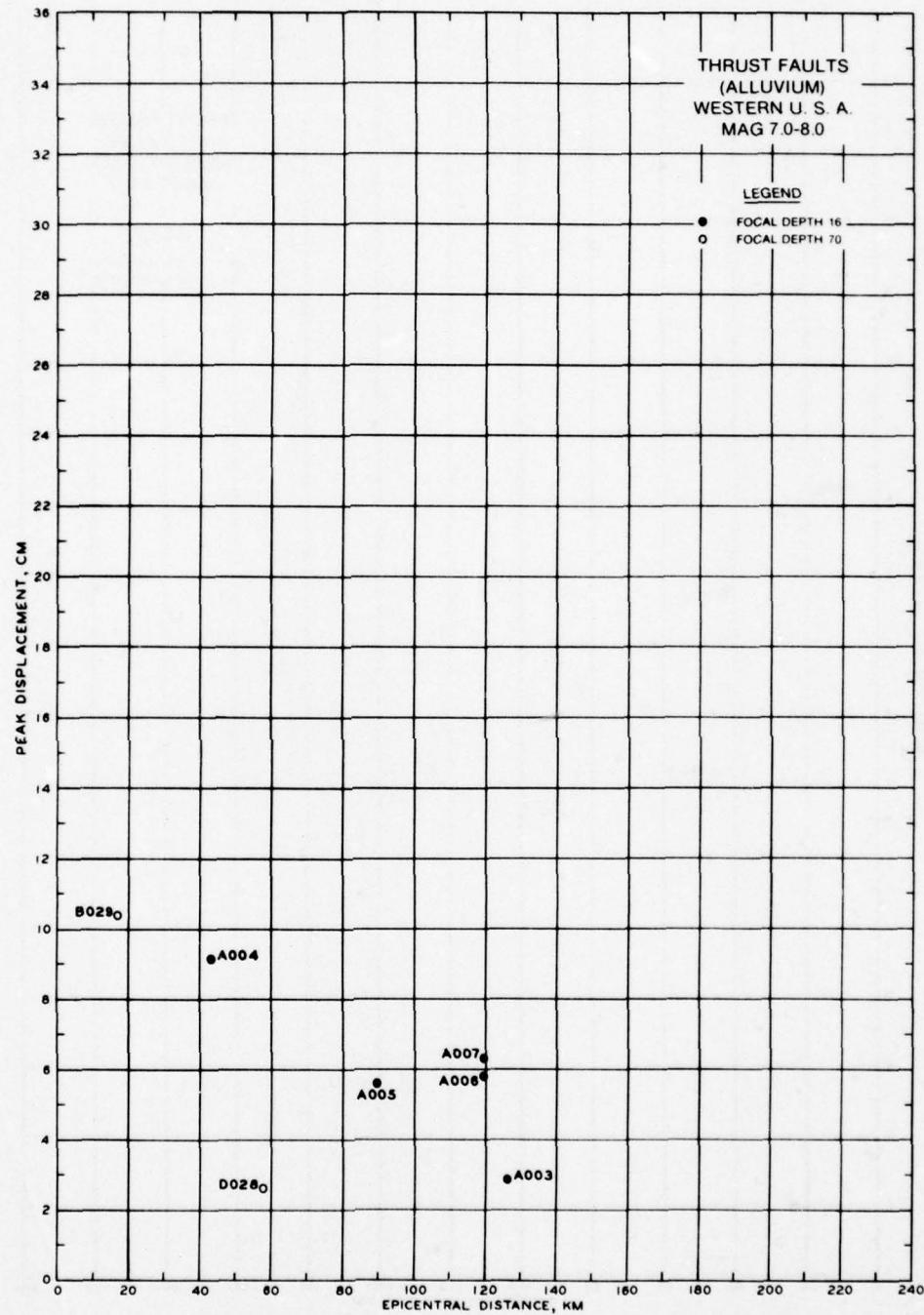


Figure 23. Peak displacement versus epicentral distance for thrust faults, magnitudes 7.0-8.0, in alluvial sites

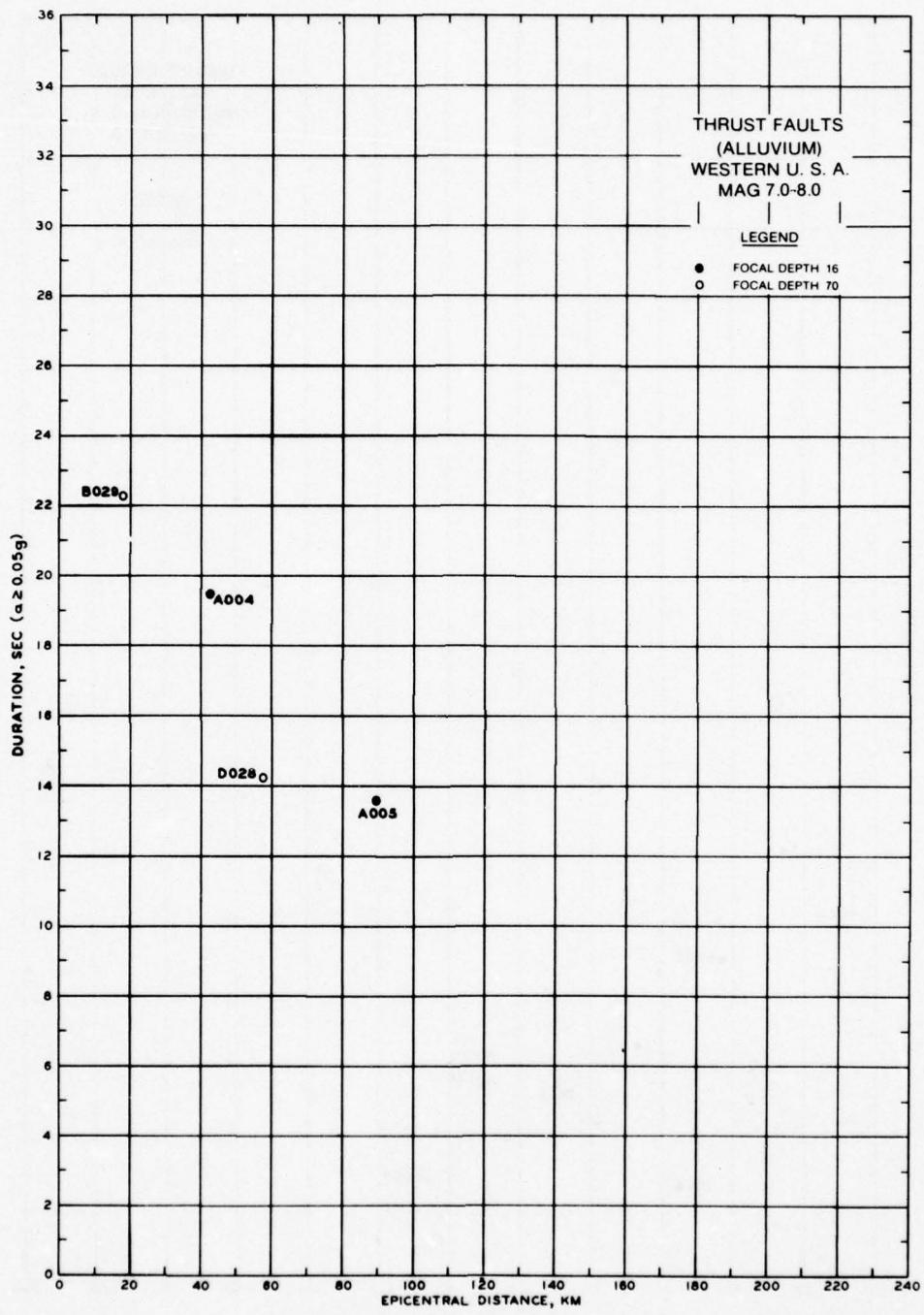


Figure 24. Bracketed duration ($a > 0.05$ g) versus epicentral distance for thrust faults, magnitudes 7.0-8.0, in alluvial sites

Appendix A: Strong Motion Data, Earthquakes of
Western United States, 1933-1971

(Columns 1 to 10: California Institute of Technology,
Earthquake Engineering Research Laboratory, "Strong
Motion Earthquake Accelerograms; Corrected Accelero-
grams and Integrated Ground Velocities and Displace-
ments," Vol 2, Parts A-Y, 1971-1975, Pasadena, Calif.
Columns 11 to 16: Compilation prepared at WES.)

CIT File No.	Recording Station	Site Classification	(2) Date of Earthquake	(3) Epicenter Location	(4) Instrument Component	(5) Peak Acceleration	(6) Peak Velocity	(7) Peak Displacement	(8) Epicentral Distance	(9) Richter Magnitude	(11) Approximate Record Length		(12) Duration (a 2.0/5 g)	(13) Predominant Period (sec)	(14) Peak Depth (ft)	(15) Peak Type of Fault	(16) Reference No. 1	
											sec	sec						
A001	El Centro Site, Imperial Valley	A	5-18-40	32°44' N 115°27' W	S 00° E	341.0	33.4	10.9	9.3	6.7			30	25.86	0.6141	0.18	0.25	1
A002	Northwest California Earthquake, Ferndale City Hall	I	10-7-51	40°17' N 126°48' W	S 45° W	102.0	4.8	2.4	5.6					25.40	1.1035	0.19	0.50	16
A003	Kern County Earthquake Athensum	A	7-21-52	35°00' N 119°02' W	S 90° W	46.5	6.2	2.7	126.0	7.7	VII			13.26	0.3889	0.11	0.35	
A004	Kern County Earthquake Taft Lincoln School	A	7-21-52	35°00' N 119°02' W	S 21° E	182.7	15.7	6.7	43.0	7.7	VII			0.40	0.2956	0.17	0.20	
A005	Kern County Earthquake Santa Barbara Courthouse	A	7-21-52	35°00' N 119°02' W	S 69° E	175.9	17.7	9.2	122.9	6.7	VII			2.48	0.4246	0.20	0.30	26
A006	Kern County Earthquake Hollywood Storage Basement	A	7-21-52	35°00' N 119°02' W	S 90° E	122.5	9.4	5.9	122.5	5.0	VII			0.5236	0.54	0.36		
A007	Kern County Earthquake P. E. Lot	A	7-21-52	35°00' N 119°02' W	S 00° W	87.8	11.8	4.6	89.5	7.7	VII			0.8377	0.65	0.47	0.50	Thrust
A008	Eureka Earthquake Eureka Federal Bldg	I	12-21-54	32°38' N 117°07' W	S 48° E	128.6	52.1	5.8	19.3	5.8	VII			0.68	1.0974	0.68	0.68	16
A009	Eureka Earthquake Ferndale City Hall	I	12-21-54	32°38' N 117°07' W	S 11° W	164.5	31.6	12.4	24.0	6.5	VII			0.7305	0.9449	0.73	0.73	
A010	San Jose Earthquake San Jose Bank of America Building	A	7-4-55	37°22' N 121°53' W	S 31° W	292.7	29.4	8.2	81.3	8.1	VII			0.18	0.6460	0.24	0.35	Thrust
A011	El Alamo, Baja California Centro Site, Imperial Valley Irrigation District	A	2-9-56	31°45' N 115°55' W	S 00° W	155.7	35.6	14.2	40.4	6.5	VII			0.4091	0.54	0.45	0.35	Thrust
A012	El Alamo, Baja California Centro Site, Imperial Valley Irrigation District (Aftershock)			31°45' N 115°55' W	S 90° W	32.4	4.0	2.4	125.9	6.8	VII			0.5236	0.54	0.36		
A013	San Francisco Earthquake, San Francisco Pacific Bldg	I	3-22-57	37°40' N 122°29' W	N 45° S	15.9	2.9	1.1	16.8	5.3	VII			0.3969	0.2	0.6996	0.4	1
A014	San Francisco Earthquake, San Francisco Alexander Bldg Basement	I	3-22-57	37°40' N 122°29' W	N 09° W	44.9	5.0	1.4	36.8	5.3	VII			0.3516	0.2	0.4559	0.1	2
A015	San Francisco Earthquake, San Francisco Golden Gate Park	HR	3-22-57	37°40' N 122°29' W	S 80° E	102.9	4.6	0.8	37.2	1.2	VII			0.2026	0.09	0.20	0.20	Strike-slip
A016	San Francisco Earthquake, San Francisco State Bldg	I	3-22-57	37°40' N 122°29' W	S 09° W	83.6	5.1	1.1	55.1	4.0	VII			0.30	0.3823	0.3	0.25	Strike-slip
					S 81° W	55.1	0.9	0.6	43.5	8.3				0.26	0.4561	0.2	0.40	11
														0.3322	0.3			(Continued)

NOTE: Locations in California unless otherwise noted.
 * A = alluvium, I = intermontane, and HR = hard rock.
 ** T = 2m x 1m x 2. Published in "United States Earthquakes" by Coast and Geodetic Survey; 3. Largest amplitude in acceleration response spectrum.
 + References listed at end of this appendix.

(Sheet 1 of 12)

CIP File No.	Recording Station	(1) Site Classification		(2) Date of Earthquake		(3) Epicenter Location		(4) Instrument Components		(5) Peak Acceleration m/sec ²		(6) Peak Velocity m/sec		(7) Peak Displacement cm		(8) Epicentral Distance km		(9) Richter Magnitude M		(10) Modified Mercalli Intensity		(11) Approx- imate Record Length sec		(12) Duration ($a \geq 0.05 g$) sec		(13) Predomi- nant Period, sec		(14) Focal Depth km		(15) Type of Fault		(16) Reference No. +	
		Bedrock	Soil	Year	Month	Day	Hour	Min	Sec	Up	Down	Left	Right	Up	Down	Left	Right	Up	Down	Left	Right	Up	Down	Left	Right	Up	Down	Left	Right	Up	Down		
A017	San Francisco Earth- quake, Oakland City Hall Basement	I		3-22-57	37°40' N	122°29' W	N	26° E	39.0	2.0	1.5	24.3	5.3	VI		0.32	0.2	11		Strike- slip													
A018	Hollister Earthquake Hollister City Hall	A		4-8-61	36°40' N	121°18' W	S	01° W	63.4	7.8	2.8	40.0	5.6	VII	30	10.00	0.77	0.20	0.55	11	Strike- slip	3											
A019	Berkeley Mt. Earthquake El Centro Site, San- peral Valley Irriga- tion District	A		4-6-68	33°09' N	116°08' W	S	00° W	127.8	25.8	12.2	69.8	6.5	VI	60	2.56	1.27	0.25	0.16	20	Strike- slip	3											
A020	Berkeley Mt. Earthquake San Diego Light & Power Bldg	A		4-8-68	33°09' N	116°08' W	S	00° W	28.9	6.0	4.4	109.9	6.5	VI	30	1.28	1.33	0.94	0.72	20	Strike- slip	3											
B021	Long Beach Earthquake Vernon (OM) Bldg	A		3-10-23	33°35' N	117°59' W	N	08° E	130.6	28.7	15.5	47.6	6.3	VI	30	1.72	1.38	0.70	0.30	10	Strike- slip												
B022	Southern California Earthquake, Hollywood Storage Bldg	A		10-2-33	33°47' N	118°08' W	S	00° E	149.5	12.0	7.4	149.5	5.4	V		0.75	0.74	0.69	0.55	10	Strike- slip												
B023	Southern California Earthquake, Hollywood Storage Bldg, Basement	A		10-2-33	33°47' N	118°08' W	S	00° E	127.1	12.7	1.9	12.7	1.3																				
B024	Lower California Earth- quake, El Centro Im- perial Valley	A		12-30-54	32°12' N	115°30' W	N	00° E	156.8	20.5	4.2	60.8	6.5	VI	30	12.86	0.82	0.25	0.25	16	Strike- slip												
B025	Helena, Montana Earth- quake, Helena, Mon- tana, Carroll College	HR		10-31-55	46°37' N	111°58' W	N	00° E	134.5	7.3	1.4	6.6	6.0	VII		1.46	0.32	0.15	0.15	8	Normal												
B026	1st Northwest Califor- nia Earthquake, Califor- nia, Portland City Hall	I		9-11-58	40°18' N	124°48' W	S	45° W	140.9	87.1	6.6	55.3	5.5	VI		1.32	0.29	0.18	0.30	16													
B027	2nd Northwest Califor- nia Earthquake, Califor- nia, Portland City Hall	I		2-9-41	40°54' N	125°24' W	S	45° W	121.3	3.5	2.0	98.4	6.6	VI		0.36	0.57	0.33	0.56	16													
B028	Western Washington Earthquake, District Builders Office at Army Base	A		4-13-49	46°06' N	122°42' W	S	02° W	66.5	2.2	2.4	57.8	7.1	VIII		1.42	0.77	0.88	0.90	70	Thrust	4											
B029	Western Washington Earthquake, Olympia, Washington, Highway Test Laboratory	A		4-13-49	46°06' N	122°42' W	S	02° W	161.6	21.4	8.5	16.8	7.1	VIII	26	22.30	0.83	0.41	0.30	70	Thrust	4											
B030	Northern California Earthquake, Ferndale City Hall	I		9-22-52	40°12' N	124°25' W	S	45° W	93.1	6.9	2.0	43.2	5.5	VI		0.06	0.82	0.46	0.43	20													
B031	Wheeler Ridge, Califor- nia Earthquake, Tait Linenon Gorge Tunnel	A		1-12-54	35°00' N	119°01' W	N	21° E	76.1	4.7	1.9	43.0	5.9	VII		0.02	0.57	0.30	0.35	70													
B032	Puget Sound, Washington Earthquake, Olympia, Washington, Highway Test Laboratory	A		4-29-65	47°26' N	122°18' W	S	00° E	136.2	8.0	2.7	61.1	6.5	VII	32	10.18	0.37	0.16	0.15	60	Dip-slip normal	5											
B033	Pearlfield, California Earthquake, Cholame, Shandon Array No. 2	A		6-27-66	35°58' N	120°54' W	N	65° E	129.6	77.9	26.3	31.9	5.6	VII	14	11.74	1.02	0.60	0.45	8.6	Strike- slip												

(Continued)

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CIT File No.	Recording Station	(1) Site Classification*	(2) Date of Earthquake	(3) Spicenter Location	(4) Instrument Component	(5) Peak Acceleration cm/sec ²	(6) Peak Velocity cm/sec	(7) Peak Displace- ment cm	(8) Epicentral Distance km	(9) Richer Mercalli Intensity	(10) Modified Mercalli Intensity	(11) Approx- imate Record Length	(12) Duration (a > 0.05 g) sec	(13) Predominant Period, sec	(14) Focal Depth km	(15) Type of Fault	(16) Reference No. t	
B034	Parfield, California Earthquake, Cholame, Shandon Army No. 5	A	6-27-66	35°54' N 120°54' W	N 0° W N 85° E Down	347.8 425.7 116.9	22.5 25.4 6.8	5.2 7.1 3.4	32.4	5.6	VI	22	6.64	0.41	0.3	0.30	8.6	
B035	Parfield, California Earthquake, Cholame, Shandon Army No. 6	A	6-27-66	35°54' N 120°54' W	N 0° E N 45° W Down	232.6 269.6 77.7	10.8 11.8 4.5	4.4 3.9 2.1	34.1	5.6	VI	20	7.84	0.29	0.1	0.15	8.6	
B036	Parfield, California Earthquake, Cholame, Shandon Army No. 12	A	6-27-66	35°54' N 120°54' W	N 50° E N 40° W Down	52.1 63.2 44.6	7.0 5.7 5.0	4.1 36.5 2.6	5.6	VI	20	5.70	0.36	0.1	0.20	8.6		
B037	Parfield, California Earthquake, Temblor No. 2	HR	6-27-66	35°54' N 120°54' W	N 65° W S 25° W	264.3 340.8	14.5 22.5	4.7 5.5	31.0	5.6	VII	20	0.79	0.2	0.1	0.15	8.6	
B038	Parfield, California Earthquake, San Luis Obispo Recession Bluff	I	6-27-66	35°54' N 120°54' W	N 36° W S 54° W Up	129.8 14.2 6.1	4.4 1.1 0.9	4.4 1.2 0.6	76.1	5.6	V	22	0.70	0.1	0.1	0.15	8.6	
B039	2nd Northern California Earthquake, Bureka Federal Bluff	I	12-10-67	40°30' N	S 11° E N 79° E Down	20.4 19.5 7.7	2.3 2.8 1.5	0.9 1.4 1.3	50.6	5.8	V	22	2.90	0.34	0.2	0.25	8.6	
B040	Borrego Mountain Earth- quake, San Onofre SCE Power Plant	I	4-8-68	33°09' N 116°08' W	S 33° E N 51° W Down	40.0 45.5 54.2	3.7 5.2 3.5	1.6 2.9 1.7	134.4	6.5	V	20	0.58	0.21	0.2	0.15	8.6	
C041	San Fernando Earthquake Aftershock	HR	2-9-71	34°24' N 118°23' 42" W	S 16° E N 74° W Down	114.6 105.4 69.6	11.2 19.9 56.3	1.1 10.8 59.3	37.7	9.1	VI	22	2.08	0.41	0.2	0.35	8.6	
C042	San Fernando Earthquake Aftershock at 52.6 sec., Pacotis Dam	I	2-9-71	34°24' N 118°23' 42" W	S 74° W S 16° E Down	27.1 20.7 8.2	2.9 1.5 1.1	1.7 0.9 1.0	16.2	6.6	X	16	0.62	0.2	0.1	0.10	Thrust	
C043	San Fernando Earthquake Aftershock at 104.6 sec., Pacotis Dam	I	2-9-71	34°24' N 118°23' 42" W	S 74° W S 16° E Down	109.9 113.2 40.5	4.8 4.7 1.8	2.2 2.2 1.0	113.2	9.1	X	14	12.14	0.34	0.2	0.15	Thrust	
C044	San Fernando Earthquake 8201 Orton Blvd., 1st Floor, Holiday Inn	A	2-9-71	34°24' N 118°23' 42" W	N 00° W N 90° W Down	250.0 131.7 167.5	30.0 13.8 34.6	14.9 13.8 42.8	22.4	6.6	VII	41	17.22	0.75	0.6	0.65	Thrust	
C051	San Fernando Earthquake 250 East First St., Basement, Los Angeles	A	2-9-71	34°24' N 118°23' 42" W	N 36° E N 54° W Down	97.8 122.7 48.0	17.1 21.9 7.8	9.2 11.6 5.8	22.4	6.6	VII	15	8.16	1.12	1.11	0.35	Thrust	
C054	San Fernando Earthquake 415 Pizero St., Sub- basement, Los Angeles	I,A	2-9-71	34°24' N 118°23' 42" W	N 52° W S 38° W Down	147.1 117.0 51.7	17.4 11.8 10.7	11.8 11.3 10.7	41.9	6.6	VII	40	5.52	0.74	1.10	0.4	Thrust	
D056	San Fernando Earthquake Old Ridge Route	I	2-9-71	34°24' N 118°23' 42" W	N 21° E N 69° W Down	309.4 265.4 153.3	16.5 21.2 6.2	4.2 9.3 14.0	28.6	6.6	VII	30	9.92	1.30	1.12	0.45	Thrust	
D057	San Fernando Earthquake Hollywood Storage Basement	A	2-9-71	34°24' N 118°23' 42" W	S 00° W N 90° E Up	103.8 148.2 49.8	17.0 19.4 6.0	8.6 13.1 3.8	37.1	6.6	VII	40	9.92	1.30	1.10	0.40	Thrust	
D058	San Fernando Earthquake Hollywood Storage P. E. Lot	A	2-9-71	34°24' N 118°23' 42" W	S 00° W N 90° E Up	167.3 207.0 87.0	16.5 8.0 5.0	8.0 37.1 3.0	37.1	6.6	VII	21	5.98	0.75	0.64	0.45	Thrust	
D059	San Fernando Earthquake 1001 Ave., The Stars Subbasement	A	2-9-71	34°24' N 118°23' 42" W	N 46° W S 34° W Down	133.8 147.1 66.7	9.6 16.7 4.8	7.5 39.8 2.5	6.6	VII	55	6.14	0.71	0.64	0.25	Thrust		
													55	6.80	0.71	0.1	0.15	Thrust
													55	6.80	0.71	0.1	0.15	Thrust

(Continued)

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CIT File No.	Recording Station	(1) Site Classification	(2) Date of Earthquake	(3) Epicenter Location	(4) Instrument Component	(5) Peak Acceleration cm/sec ²	(6) Peak Velocity cm/sec	(7) Peak Displacement cm	(8) Epicentral Distance km	(9) Richter Magnitude	(10) Modified Mercalli Intensity	(11) Approximate Intensity Record Length sec	(12) Duration (a > 0.05 sec)	(13) Predominant Period, sec	(14) Depth, sec	(15) Type of Fault	(16) Reference No.†
D062	San Fernando Earthquake 1640 South Maringo St. 1st Floor, Los Angeles	A	2-9-71	34°24' N 118°23.7' W	N 38° W S 52° W Down	118.0 130.0 9.0	17.6 6.9 4.1	12.0 10.3 4.9	12.0 10.0 4.0	6.6	VII	30	6.68 6.68 0.76	0.2 0.2 0.2	0.25 0.30 0.30	13	
D065	San Fernando Earthquake 3710 Wilshire Blvd., Basement, Los Angeles	A,I	2-9-71	34°24' N 118°23.7' W	S 00° W N 90° W Down	106.7 91.0 74.6	22.1 9.0 4.1	18.0 10.3 4.9	12.9 10.0 4.9	6.6	VII	17	5.78 5.77 2.96	0.5 0.5 0.4	0.30 0.30 0.30	13	
D068	San Fernando Earthquake 7080 Hollywood Blvd. Basement, Los Angeles	A	2-9-71	34°24' N 118°23.7' W	S 00° E N 90° E Down	81.0 98.0 57.2	13.3 7.2 5.6	12.6 9.2 4.2	8.1 7.2 4.2	6.6	VII	30	6.68 6.68 0.62	0.2 0.2 0.2	0.25 0.30 0.35	13	
E071	San Fernando Earthquake Wheeler Ridge	A	2-9-71	34°24' N 118°23.7' W	S 00° W N 90° E Down	26.5 25.3 25.3	1.9 2.5 2.5	1.9 2.1 2.1	66.0 66.0 66.0	6.6	V	17	5.78 5.77 2.96	0.5 0.5 0.4	0.30 0.30 0.30	13	
E072	San Fernando Earthquake 4680 Wilshire Blvd. Basement, Los Angeles	I	2-9-71	34°24' N 118°23.7' W	N 15° W S 00° E Down	82.2 115.0 64.8	20.8 21.5 6.9	20.8 21.5 6.9	8.1 7.2 3.2	6.6	VII	18	7.76 7.76 1.70	1.59 1.59 0.67	0.55 0.55 0.45	13	
E075	San Fernando Earthquake 3470 Wilshire Blvd. Subbasement, Los Angeles	A	2-9-71	34°24' N 118°23.7' W	N 00° E S 90° W Down	133.8 111.8 117.3	22.3 18.5 7.3	11.4 11.6 7.3	11.4 11.6 7.3	6.6	VII	22	5.10 10.44 0.97	1.05 1.04 0.2	0.30 0.30 0.30	13	
E078	San Fernando Earthquake Water and Power Bldg. Basement, Los Angeles	I	2-9-71	34°24' N 118°23.7' W	S 50° W S 40° W Down	162.5 169.2 67.2	23.2 16.1 10.2	13.7 16.1 6.4	8.9 8.9 6.4	6.6	VII	17	5.26 5.68 0.95	1.15 0.59 0.2	0.35 0.30 0.30	13	
E081	San Fernando Earthquake Santa Feilia Dam, Santa Feilia Dam, Oscill Works	HR	2-9-71	34°24' N 118°23.7' W	S 08° E S 42° W Down	213.0 198.3 63.7	9.9 6.8 4.5	7.0 6.4 4.6	32.9 32.9 2.8	6.6	VI	34	6.48 3.48 0.76	0.29 0.20 0.14	0.30 0.30 0.30	13	
E082	San Fernando Earthquake Santa Feilia Dam, Crest	A	2-9-71	34°24' N 118°23.7' W	S 15° E S 75° W Down	203.3 173.2 65.0	22.2 22.2 6.2	7.1 5.3 2.8	32.8 32.8 2.8	6.6	VI	37	5.26 5.68 0.66	1.15 0.59 0.60	0.35 0.30 0.30	13	
E083	San Fernando Earthquake 3407 6th St., Basement, Los Angeles	A	2-9-71	34°24' N 118°23.7' W	S 00° W N 90° E Down	158.2 160.9 55.5	18.3 16.5 8.8	9.0 16.5 8.4	10.0 10.3 4.4	6.6	VII	25	12.32 12.32 0.02	0.73 0.64 0.99	0.30 0.15 0.15	13	
F086	San Fernando Earthquake Vernon, 360 Bldg.	A	2-9-71	34°24' N 118°23.7' W	S 83° W S 07° W Up	104.6 80.5 42.7	17.4 15.1 6.7	14.8 10.7 4.0	49.4 49.4 4.0	6.6	V	25	5.52 1.05 0.99	1.05 0.55 0.39	0.45 0.45 0.45	13	
F087	San Fernando Earthquake Engineering Bldg. Santa Ana, Orange County	A	2-9-71	34°24' N 118°23.7' W	S 08° E S 86° W Up	26.8 28.2 16.7	5.0 5.7 2.4	3.6 5.7 1.7	88.5 88.5 2.4	6.6	VI	25	5.52 1.05 0.90	1.17 0.55 0.2	0.25 0.3 0.2	13	
F088	San Fernando Earthquake 633 East Broadway Municipal Service Bldg., Glendale	A,I	2-9-71	34°24' N 118°23.7' W	S 70° E S 20° W Down	265.7 209.1 131.5	30.7 23.5 15.6	11.1 5.3 5.6	34.1 5.3 5.6	6.6	VII	27	6.02 10.20 9.62	0.73 0.71 0.74	0.28 0.20 0.20	13	
F089	San Fernando Earthquake 808 South Olive St. Los Angeles	A	2-9-71	34°24' N 118°23.7' W	S 53° E S 31° W Down	131.9 139.0 75.5	20.8 20.7 6.0	14.5 11.6 6.0	44.0 43.1 43.1	6.6	VII	22	6.52 9.76 2.96	0.99 0.94 0.83	0.45 0.35 0.30	13	
F092	San Fernando Earthquake 2011 Zonal Ave., Base- ment, Los Angeles	I	2-9-71	34°24' N 118°23.7' W	S 60° E S 28° W Down	64.2 74.9 46.7	13.8 11.5 7.1	7.0 6.3 3.8	43.1 43.1 3.8	6.6	VII	22	2.56 3.66 3.66	1.35 0.91 0.92	0.45 0.35 0.35	13	
F095	San Fernando Earthquake 120 North Robertson Bldg., Subbasement, Los Angeles	A	2-9-71	34°24' N 118°23.7' W	S 88° E S 00° W Down	96.2 83.9 26.5	16.8 17.9 6.2	10.6 12.1 3.9	37.4 37.4 3.9	6.6	VII	22	5.96 5.96 1.47	1.09 1.09 1.07	0.30 0.30 0.30	13	
F098	San Fernando Earthquake 616 South Olive Ave Basement, Los Angeles	A	2-9-71	34°24' N 118°23.7' W	S 53° E S 31° W Down	236.4 192.0 69.2	21.8 18.5 9.6	13.2 11.4 5.3	42.7 42.7 9.6	6.6	VII	22	7.56 9.80 4.68	0.58 0.60 0.87	0.20 0.20 0.120	13	

(Continued)

(1) CIT File No. Recording Station	(2) Date of Earthquake	(3) Event Location	(4) Instrument Component	(5) Z-axis Acceleration cm/sec ²	(6) Peak Velocity cm/sec	(7) Peak Displace- ment cm	(8) Bipartite Distance km	(9) Richter Magnitude M	(10) Modified Mercalli Intensity	(11) Approx- imate Record Length sec	(12) Duration (a \geq 0.05 g) sec	(13) Predominant Period, sec 300	(14) Focal Depth km	(15) Type of Fault	(16) Reference No.†	
F101 San Fernando Earthquake Cotton	2-9-71	30°24' N 118°23.7' W	S 0° E N 90° E Up	37.5	2.5	1.1	107.6	6.6	V	0.42	0.3	13	Thrust			
F102 San Fernando Earthquake Fort Tejon, Tejon Cotton	2-9-71	30°24' N 118°23.7' W	N 0° E N 90° E Down	30.0	2.2	1.3				0.46	0.3					
F103 San Fernando Earthquake Pumpings Plant, Pear- blossom	2-9-71	30°24' N 118°23.7' W	N 0° E N 90° W Down	19.7	1.5	1.4	0.8	68.5	V	0.36	0.2	13	Thrust			
F104 San Fernando Earthquake Oso Pumping Plant, Gorman	2-9-71	30°24' N 118°23.7' W	N 0° E N 90° W Down	20.6	1.3	0.7				0.39	0.1					
F105 San Fernando Earthquake UCLA Reactor Labora- tory, Los Angeles	2-9-71	30°24' N 118°23.7' W	S 0° W N 90° E Up	15.3	1.0	0.5				0.41	0.1					
G106 San Fernando Earthquake CIT Seismological Laboratory	2-9-71	30°24.42" N 118°24.00" W	S 0° W N 90° W Down	91.5	4.4	2.5	45.4	6.6	V	7.72	0.30	0.1	0.15	Thrust		
G107 San Fernando Earthquake Atheneum, CIT	2-9-71	30°24.42" N 118°24.00" W	N 0° E N 90° E Down	120.5	5.4	2.4				7.48	0.30	0.1	0.15	Thrust		
G108 San Fernando Earthquake CIT Millikan Library	2-9-71	30°24.42" N 118°24.00" W	N 0° E N 90° E Down	47.4	2.3	1.7				4.20	0.30	0.1	0.15	Thrust		
G110 San Fernando Earthquake CIT Set Propulsion Laboratory Basement	2-9-71	30°24.42" N 118°24.00" W	S 0° E N 90° W Down	188.6	11.6	5.0	85.2	8.5	V	6.00	0.63	0.2	0.20	Thrust		
G112 San Fernando Earthquake 611 West Sixth St, Los Angeles Basement, Los Angeles	2-9-71	30°24.42" N 118°24.00" W	N 0° E N 90° E Down	92.9	4.5	2.9				1.80	0.36	0.2	0.20	Thrust		
G114 San Fernando Earthquake Pomona Fire Station Storage Room	2-9-71	30°24.42" N 118°24.00" W	N 0° E N 90° E Down	101.9	17.0	11.0	87.5	5.8	V	2.5	0.39	0.2	0.25	Thrust		
G115 San Fernando Earthquake 1550 Ventura Blvd Basement	2-9-71	30°24.42" N 118°24.00" W	S 60° E N 30° W Down	110.8	14.0	8.7	181.6	16.3	V	2.12	0.43	0.1	0.15	Thrust		
H118 San Fernando Earthquake 8659 Lincoln Ave Basement, Los Angeles	2-9-71	30°24.42" N 118°24.00" W	S 82° E N 18° W Down	207.8	13.4	9.0	93.5	5.7	V	2.3	5.60	0.41	0.3	0.35	Thrust	
H221 San Fernando Earthquake 900 South Fremont Ave Basement, Alhambra	2-9-71	30°24.42" N 118°24.00" W	N 52° W N 38° E Down	101.9	17.0	11.0	98.0	7.9	V	4.5	5.88	0.42	0.4	0.35	Thrust	
H224 San Fernando Earthquake 2600 Natwood Ave Basement, Fullerton	2-9-71	30°24.42" N 118°24.00" W	S 90° E N 0° W Down	119.4	17.1	9.2	108.0	9.8	V	2.6	6.42	0.53	0.4	0.30	Thrust	
H228 San Fernando Earthquake 435 North Oakhurst Ave Basement, Beverly Hills	2-9-71	30°24.42" N 118°24.00" W	N 50° E N 40° W Down	91.6	15.0	8.1	112.3	16.3	V	4.5	7.42	0.84	0.4	0.45	Thrust	
H331 San Fernando Earthquake 420 North Roxbury Dr 1st Floor, Beverly Hills	2-9-71	30°24.42" N 118°24.00" W	N 50° E N 40° W Down	184.3	17.2	9.2	180.6	14.5	V	3.5	5.58	1.03	0.2	0.40	Thrust	
				160.6	16.1	9.1	112.3	16.4		3.5	7.74	0.58	0.1	0.25	Thrust	
				37.2	2.3	1.5	36.4	5.8		3.5	6.26	0.55	0.2	0.20	Thrust	

(Continued)

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CIT File No.	Recording Station No.	Site Classification	Date of Earthquake	Epicenter Location	Instrument Component	(5)		(6)		(7)		(8)		(9)		(10)		(11)	
						(2)	(3)	(4)	Peak Acceleration cm/sec ²	Peak Displace- ment cm	Epicentral Distance km	Richter Magnitude M	Modified Mercalli Intensity	(12)	Duration (a \geq 0.05 sec)	(13)	Predominant Period sec	Focal Depth km	Type of Fault
1134	San Fernando Earthquake	A	2-9-71	34°24'142" N 118°24'100" W	N 34° E S 36° E	97.9 82.3	16.7 10.7	11.3 6.2	6.6	VI	38.9	6.6	VI	5.12	1.07	0.4	0.40	13	
	1800 Century Park East, Basement (P3)					62.5 5.7	2.5	2.5				5.34 0.30	0.57	0.3	0.30				
1137	San Fernando Earthquake	A	2-9-71	34°24'142" N 118°24'100" W	S 61° E N 21° E	140.2 129.0	16.1 22.3	7.1 8.4	29.0	VI	39	19.50	0.72	0.4	0.45	13	Thrust		
	15910 Ventura Blvd Basement, Los Angeles					99.9 7.9	2.5	2.5				16.12 10.20	1.08 0.49	0.3	0.40				
J141	San Fernando Earthquake	HR	2-9-71	34°24'142" N 118°24'100" W	N 21° E S 59° E	145.5 108.9	18.0 14.4	3.4 2.9	29.6	VI	22	3.54 5.14	0.78 0.83	0.7	0.70				
	Lake Hughes Array No. 1					93.0 11.7	2.5	2.5				10.20 5.96	0.49 0.79	0.3	0.30				
J142	San Fernando Earthquake	HR	2-9-71	34°24'142" N 118°24'100" W	S 69° E N 21° W	168.2 143.5	5.3 8.6	1.2 1.7	26.8	VI	37	4.94 4.82	0.20 0.28	0.2	0.20	13	Thrust		
	Lake Hughes Array No. 4					150.8 15.8	6.8 1.6	6.8 1.6				4.32 4.82	0.38 0.28	0.2	0.20				
J143	San Fernando Earthquake	HR	2-9-71	34°24'142" N 118°24'100" W	N 21° E S 59° W	119.3 109.4	4.8 2.4	2.0 2.4	26.6	VI	27	4.50 2.82	0.25 0.25	0.1	0.15				
	Lake Hughes Array No. 9					109.4 72.5	2.4 2.2	2.4 2.2				2.82 2.68	0.25 0.25	0.1	0.30	13	Thrust		
J144	San Fernando Earthquake	I	2-9-71	34°24'142" N 118°24'100" W	N 21° E S 69° W	146.2 277.9	1.6 12.4	1.6 8.9	23.3	VI	22	14.00 3.66	0.27 0.28	0.2	0.20				
	Lake Hughes Array No. 12					105.3 4.1	3.3 3.3	3.3 3.3				14.00 3.66	0.27 0.28	0.1	0.25				
J145	San Fernando Earthquake	A	2-9-71	34°24'142" N 118°23'142" W	S 00° E S 90° W	113.9 103.4	31.5 28.5	17.5 15.3	34.9	VI	40	15.74 16.26	1.73 1.75	0.3	0.40	13	Thrust		
	15107 Van Oene St Basement, Los Angeles					106.4 106.4	18.1 17.5	18.1 17.5				21.00 16.26	1.07 1.75	0.4	0.20				
J148	San Fernando Earthquake	A, I	2-9-71	34°24'142" N 118°23'142" W	N 00° E S 90° W	107.6 112.0	16.2 11.1	7.0 7.3	39.9	VI	19	6.94 10.24	0.94 0.98	0.2	0.30	13	Thrust		
	616 South Normandie Ave, Basement, Los Angeles					112.0 51.6	11.0 6.7	11.0 3.4				10.24 0.82	0.92	0.2					
J149	San Fernando Earthquake	I	2-9-71	34°24'142" N 118°23'142" W	N 00° E S 90° W	164.2 147.6	12.3 15.0	4.9 5.4	30.8	VI	26	5.42 5.36	0.47 0.45	0.2	0.15				
	3838 Lankershim Blvd Basement, Los Angeles					69.7 5.0	2.4 2.4	2.4 2.4				6.14 6.14	0.45 0.45	0.2	0.35	13	Thrust		
J151	San Fernando Earthquake	I	2-9-71	34°24'142" N 118°23'142" W	N 33° E N 57° W	14.7 15.9	1.8 2.8	2.1 2.1	139.8	VI	52	0.94 1.11	0.2 1.11	0.2	0.15				
	Nuclear Power Plant San Onofre					10.3 10.3	1.5 1.5	1.5 1.5				1.11 0.91	0.4 0.4	0.1	0.15				
M176	San Fernando Earthquake	A	2-9-71	34°24'142" N 118°23'142" W	S 37° E S 53° E	83.4 116.0	20.9 17.7	13.7 13.7	42.9	VI	33	7.90 7.06	1.57 1.56	0.4 0.4	1.20 1.10	13	Thrust		
	1150 South Hill St. Subbasement, Los Angeles					116.0 41.6	17.7 8.9	17.7 8.9				7.06 1.34	0.96 0.2	0.4	0.10				
M179	San Fernando Earthquake	I	2-9-71	34°24'142" N 118°23'142" W	S 00° W S 90° E	20.8 46.7	1.1 2.6	0.7 0.9	70.7	VI	13	0.47 0.35	0.2 0.2	0.3	0.25	13	Thrust		
	Teachachi Pumping Plant, CR Site Grapeline					38.5 2.0	2.0 1.2	2.0 1.2				6.14 0.33	0.45 0.33	0.2	0.35				
M180	San Fernando Earthquake	A	2-9-71	34°24'142" N 118°23'142" W	S 00° W S 90° W	23.9 29.9	5.7 8.5	3.5 2.5	84.3	VI	26	5.42 5.36	0.47 0.45	0.2	0.35	13	Thrust		
M183	San Fernando Earthquake	I	2-9-71	34°24'142" N 118°23'142" W	N 65° E N 25° E	42.4 22.9	3.8 2.6	1.2 1.2	70.8	VI	20	0.94 3.66	0.2 0.28	0.1	0.15	13	Thrust		
M184	San Fernando Earthquake	I	2-9-71	34°24'142" N 118°23'142" W	N 65° E S 25° W	43.1 57.2	4.6 2.9	1.2 0.7	70.8	VI	26	0.67 0.46	0.3 0.46	0.1	0.15	13	Thrust		
M185	San Fernando Earthquake	I	2-9-71	34°24'142" N 118°24'100" W	S 50° E S 40° W	67.3 67.3	3.3 4.5	1.7 2.1	75.6	VI	40	3.02 5.34	0.2 0.42	0.2	0.35	13	Thrust		
	Carbon Canyon Dam Crest					41.5 2.5	2.5 1.6	2.5 1.6				0.38 0.2	0.25 0.25	0.2	0.25				

CIT File No.	Recording Station	(1) Site Classification		(2) Date of Earthquake		(3) Epicenter Location		(4) Instrument Component		(5) Peak Acceleration cm/sec ²		(6) Peak Velocity cm/sec		(7) Peak Displacement cm		(8) Epicentral Distance km		(9) Richter Magnitude M		(10) Modified Mercalli Intensity		(11) Approx- imate Record Length sec		(12) Duration (a > 0.05 g) sec		(13) Predominant Period sec		(14) Focal Depth km		(15) Type of Fault		(16) Reference No.†		
		Earthquake	Location	Date	Year	Latitude	Longitude	Instrument	Component	95.7	95.7	8.8	4.9	54.1	6.6	VI	VI	2.76	0.58	0.2	0.20	2.00	3.00	0.2	0.20	13	Thrust	Thrust	Thrust	Thrust	Thrust	Thrust	Thrust	
N186	San Fernando Earthquake Whittier Narrows Dam	A	2-9-71	34°24'42" N 118°24'00" W	96.7	96.7	9.7	5.0	5.0	9.7	8.8	4.9	4.9	54.1	6.6	VI	VI	4.62	0.63	0.2	0.20	2.00	3.00	0.2	0.20	13	Thrust	Thrust	Thrust	Thrust	Thrust	Thrust	Thrust	
N187	San Fernando Earthquake San Antonio Dam Uplands	A	2-9-71	34°24'42" N 118°24'00" W	95.7	95.7	9.7	5.0	5.0	9.7	8.8	4.9	4.9	54.1	6.6	VI	VI	5.12	0.35	0.3	0.25	2.00	3.00	0.2	0.20	13	Thrust	Thrust	Thrust	Thrust	Thrust	Thrust	Thrust	
N188	San Fernando Earthquake 1880 Century Park East, Parking, 1st Level, Los Angeles	A	2-9-71	34°24'42" N 118°24'00" W	95.7	95.7	9.7	5.0	5.0	9.7	8.8	4.9	4.9	54.1	6.6	VI	VI	4.5	5.22	0.93	0.3	0.30	2.00	3.00	0.2	0.20	13	Thrust	Thrust	Thrust	Thrust	Thrust	Thrust	Thrust
N191	San Fernando Earthquake 2516 Via Tijuana Ground Level, Palos Verdes Estates	I	2-9-71	34°24'42" N 118°24'00" W	95.7	95.7	9.7	5.0	5.0	9.7	8.8	4.9	4.9	54.1	6.6	VI	VI	5.08	0.50	0.1	0.30	2.00	3.00	0.2	0.20	13	Thrust	Thrust	Thrust	Thrust	Thrust	Thrust	Thrust	
N192	San Fernando Earthquake 2500 Wilshire Blvd Bathroom, Los Angeles	I	2-9-71	34°24'42" N 118°24'00" W	95.7	95.7	9.7	5.0	5.0	9.7	8.8	4.9	4.9	54.1	6.6	VI	VI	5.62	0.73	0.2	0.20	2.00	3.00	0.2	0.20	13	Thrust	Thrust	Thrust	Thrust	Thrust	Thrust	Thrust	
N195	San Fernando Earthquake San Juan Capistrano	A	2-9-71	34°24'42" N 118°24'00" W	95.7	95.7	9.7	5.0	5.0	9.7	8.8	4.9	4.9	54.1	6.6	VI	VI	5.82	1.24	0.1	0.10	2.00	3.00	0.2	0.20	13	Thrust	Thrust	Thrust	Thrust	Thrust	Thrust	Thrust	
N196	San Fernando Earthquake Long Beach State College, Ground Level	A	2-9-71	34°24'42" N 118°24'00" W	95.7	95.7	9.7	5.0	5.0	9.7	8.8	4.9	4.9	54.1	6.6	VI	VI	5.99	0.96	0.2	0.20	2.00	3.00	0.2	0.20	13	Thrust	Thrust	Thrust	Thrust	Thrust	Thrust	Thrust	
N197	San Fernando Earthquake Ana Post Office Storage Room, Anza	A	2-9-71	34°24'42" N 118°24'00" W	95.7	95.7	9.7	5.0	5.0	9.7	8.8	4.9	4.9	54.1	6.6	VI	VI	6.02	1.14	0.1	0.10	2.00	3.00	0.2	0.20	13	Thrust	Thrust	Thrust	Thrust	Thrust	Thrust	Thrust	
Q198	San Fernando Earthquake HR	A	2-9-71	34°24'42" N 118°24'00" W	95.7	95.7	9.7	5.0	5.0	9.7	8.8	4.9	4.9	54.1	6.6	VI	VI	6.10	1.22	0.2	0.20	2.00	3.00	0.2	0.20	13	Thrust	Thrust	Thrust	Thrust	Thrust	Thrust	Thrust	
Q199	San Fernando Earthquake 1625 Olympic Blvd Los Angeles	A	2-9-71	34°24'42" N 118°24'00" W	95.7	95.7	9.7	5.0	5.0	9.7	8.8	4.9	4.9	54.1	6.6	VI	VI	6.18	1.30	0.2	0.20	2.00	3.00	0.2	0.20	13	Thrust	Thrust	Thrust	Thrust	Thrust	Thrust	Thrust	
Q204	San Fernando Earthquake 215 West Broadway Long Beach	A	2-9-71	34°24'42" N 118°24'00" W	95.7	95.7	9.7	5.0	5.0	9.7	8.8	4.9	4.9	54.1	6.6	VI	VI	6.26	0.73	0.4	0.25	2.00	3.00	0.2	0.20	13	Thrust	Thrust	Thrust	Thrust	Thrust	Thrust	Thrust	
Q205	San Fernando Earthquake Terminal Island Long Beach	A	2-9-71	34°24'42" N 118°24'00" W	95.7	95.7	9.7	5.0	5.0	9.7	8.8	4.9	4.9	54.1	6.6	VI	VI	6.38	0.39	0.2	0.20	2.00	3.00	0.2	0.20	13	Thrust	Thrust	Thrust	Thrust	Thrust	Thrust	Thrust	
Q206	San Fernando Earthquake Hall of Records San Bernardino	A	2-9-71	34°24'42" N 118°24'00" W	95.7	95.7	9.7	5.0	5.0	9.7	8.8	4.9	4.9	54.1	6.6	VI	VI	6.46	0.54	0.3	0.25	2.00	3.00	0.2	0.20	13	Thrust	Thrust	Thrust	Thrust	Thrust	Thrust	Thrust	
Q207	San Fernando Earthquake Fairmont Reservoir Fairmont	HR	2-9-71	34°24'42" N 118°24'00" W	95.7	95.7	9.7	5.0	5.0	9.7	8.8	4.9	4.9	54.1	6.6	VI	VI	6.54	0.37	0.2	0.20	2.00	3.00	0.2	0.20	13	Thrust	Thrust	Thrust	Thrust	Thrust	Thrust	Thrust	
Q208	San Fernando Earthquake University of Calif- ornia, Santa Barbara	I	2-9-71	34°24'42" N 118°24'00" W	95.7	95.7	9.7	5.0	5.0	9.7	8.8	4.9	4.9	54.1	6.6	VI	VI	6.62	0.54	0.2	0.20	2.00	3.00	0.2	0.20	13	Thrust	Thrust	Thrust	Thrust	Thrust	Thrust	Thrust	
Q210	San Fernando Earthquake Fire Station, Hemet	A	2-9-71	34°24'42" N 118°24'00" W	95.7	95.7	9.7	5.0	5.0	9.7	8.8	4.9	4.9	54.1	6.6	VI	VI	6.70	0.51	0.2	0.20	2.00	3.00	0.2	0.20	13	Thrust	Thrust	Thrust	Thrust	Thrust	Thrust	Thrust	

(Continued)

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CRT File No.	Recording Station	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)		(9)		(10)		(11)	
		Site Classification	Date of Earthquake	Epicenter Location	Instrument Component	Instrument Location	Peak Acceleration	Peak Velocity	Peak Displace- ment	Peak Richter Magnitude	Peak Modified Mercalli Intensity	Approx- imate Record Length	Duration (a sec)	Predominant Period, sec	Period, sec	Depth km	Focal Depth km	Type of Fault	Reference No.†				
P213	1215 Gallery, Hoover Dam	HR	2-9-71	34°24'42" N 118°24'00" W	S 45° E S 45° W	0.65 1.23	0.29 0.29	0.21 0.19	6.6	III	378.3	2.61	2.00	2.00	6.6	1.48	13	Thrust					
P214	San Fernando Earthquake 1867 Sunset Blvd Los Angeles	I	2-9-71	34°24'42" N 118°24'00" W	S 89° N S 01° E	154.00 156.00	23.20 16.20	8.02 7.94	6.6	VII	15	6.12	0.95	0.4	0.25	0.4	0.65	0.4	Thrust				
P217	San Fernando Earthquake 3345 Wilshire Blvd Los Angeles	A	2-9-71	34°24'42" N 118°24'00" W	S 00° W S 90° E	108.00 115.00	14.70 9.84	5.15 5.15	6.0	VII	35	5.52	0.85	0.5	0.45	0.4	0.52	0.4	Thrust				
P220	San Fernando Earthquake 666 West 19th St Costa Mesa	I	2-9-71	34°24'42" N 118°24'00" W	S 00° W S 90° E	88.10 98.10	16.10 16.10	9.09 9.09	6.6	VII	35	5.32	1.15	0.4	0.30	0.4	0.52	0.3	Thrust				
P221	San Fernando Earthquake Santa Anita Reservoir Arcadia	HR	2-9-71	34°24'42" N 118°24'00" W	S 03° E S 87° W	137.00 185.00	5.22 6.66	3.15 3.15	6.6	VII	28	10.88	0.24	0.1	0.20	0.2	0.25	0.2	Thrust				
P222	San Fernando Earthquake Navy Laboratory Port Hueneme	A	2-9-71	34°24'42" N 118°24'00" W	S 00° W S 90° W	24.10 34.30	7.01 5.78	6.92 6.70	6.6	VII	60	1.06	2.35	0.2	0.2	0.2	0.25	0.2	Thrust				
P223	San Fernando Earthquake Paddington Reserve- wall, San Dimas	HR	2-9-71	34°24'42" N 118°24'00" W	S 55° E N 35° W	69.70 53.20	4.60 4.39	2.07 1.82	6.6	V	32	0.42	0.41	0.3	0.20	0.2	0.25	0.1	Thrust				
P231	San Fernando Earthquake 98th Airport Blvd Los Angeles	A	2-9-71	34°24'42" N 118°24'00" W	S 00° E S 90° W	25.90 25.20	7.25 5.51	4.54 4.92	79.3	VI	58	1.76	1.83	0.3	0.2	0.2	0.25	0.2	Thrust				
P233	San Fernando Earthquake 14724 Ventura Blvd Los Angeles	A	2-9-71	34°24'42" N 118°24'00" W	S 12° E S 78° W	213.00 197.00	31.50 15.70	18.30 9.46	6.6	VII	36	17.48	0.81	0.3	0.20	0.3	0.57	0.3	Thrust				
P236	San Fernando Earthquake 1760 North Orchid Ave Los Angeles	A	2-9-71	34°24'42" N 118°24'00" W	South	96.00 167.00	9.65 13.40	3.82 6.13	6.6	VII	30	7.54	0.63	0.2	0.30	0.2	0.37	0.1	Thrust				
P239	San Fernando Earthquake 9100 Wilshire Blvd Los Angeles	A	2-9-71	34°24'42" N 118°24'00" W	South	119.00 161.00	17.20 19.10	9.79 11.60	6.6	VII	36	9.50	0.50	0.2	0.20	0.2	0.53	0.2	Thrust				
P241	San Fernando Earthquake 800 West First St Los Angeles	I	2-9-71	34°24'42" N 118°24'00" W	S 37° E N 53° W	86.80 138.00	17.90 19.60	9.22 9.95	6.6	VII	25	5.36	0.60	0.2	0.20	0.2	0.25	0.2	Thrust				
P243	San Fernando Earthquake 222 Figueroa St Los Angeles	A or I	2-9-71	34°24'42" N 118°24'00" W	S 53° W S 37° W	122.00 173.20	12.30 7.49	1.87 1.87	6.6	VII	30	5.20	0.50	0.2	0.20	0.2	0.25	0.2	Thrust				
P246	San Fernando Earthquake 55th Sunset Blvd Los Angeles	A	2-9-71	34°24'42" N 118°24'00" W	South	115.00 166.00	16.00 18.70	8.29 10.40	6.6	VII	23	11.40	0.91	0.2	0.20	0.2	0.3	0.2	Thrust				
P248	San Fernando Earthquake 6130 Sunset Blvd Los Angeles	A	2-9-71	34°24'42" N 118°24'00" W	South	149.00 184.00	18.30 18.70	9.80 9.93	6.6	VII	20	9.54	0.74	0.2	0.20	0.2	0.3	0.2	Thrust				
P249	San Fernando Earthquake 1900 Avenue of the Stars, Los Angeles	A	2-9-71	34°24'42" N 118°24'00" W	S 44° E S 46° E	79.80 84.10	16.20 10.00	11.40 7.34	6.6	VII	23	4.24	1.27	0.3	0.30	0.2	0.3	0.2	Thrust				
P251	San Fernando Earthquake 230 South Figueroa St, Los Angeles	A or I	2-9-71	34°24'42" N 118°24'00" W	S 37° E S 53° E	105.00 188.00	16.70 18.70	8.33 9.49	6.6	VII	20	6.10	0.50	0.2	0.20	0.2	0.25	0.2	Thrust				
						67.50	7.78	4.75				6.76	0.54	0.3	0.20	0.2	0.45	0.2	Thrust				

(Continued)

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CIT File No.	Recording Station Name	Site Classification	Date	Epicenter Location	Instrument Component	(5) Peak Acceleration cm/sec ²	(6) Peak Velocity cm/sec	(7) Peak Displace- ment cm	(8) Bipolar Distance km	(9) Richer- Mercalli Intensity	(10) Modified Mercalli Intensity	(11) Approx- imate Duration (a > 0.05 sec)	(12) Record Length sec	(13) Predom- inant Period, sec	(14) Focal Depth km	(15) Type of Fault	(16) Reference No.	
R253	San Fernando Earthquake 6200 Wilshire Blvd Los Angeles	A	2-9-71	34°24'42" N 118°24'00" W	Up	242.00 220.00 81.60	19.20 18.00 9.88	11.40 12.40 5.40	43.0	6.6	VII	25	8.40 8.46 1.40	0.49 0.51 0.76	0.3 0.3 0.20	0.25 0.3 0.13	Thrust	
S255	San Fernando Earthquake 533 South Fremont Ave Los Angeles																	
S258	San Fernando Earthquake 340 University Ave Los Angeles	A	2-9-71	34°24'42" N 118°24'00" W	Up	46.80	5.20	2.65			VII			8.46 0.70	1.07 0.2	0.45 0.2	13	Thrust
S261	San Fernando Earthquake 1117 Beverly Dr Los Angeles	A	2-9-71	34°24'42" N 118°24'00" W	Up	64.00	4.95	2.26			VII			4.02 2.48 0.00	1.92 1.39 0.82	0.35 0.35 0.30	13	Thrust
S262	San Fernando Earthquake 9900 Wilshire Blvd Los Angeles																	
S265	San Fernando Earthquake 3435 Wilshire Blvd† Los Angeles																	
S266	San Fernando Earthquake 3550 Wilshire Blvd Los Angeles	A	2-9-71	34°24'42" N 118°24'00" W	Up	153.00	17.50	8.04	40.0	6.6	VII	25	8.80 4.10	2.36 1.87	0.4 0.2	13	Thrust	
S267	San Fernando Earthquake 5260 Century Blvd Los Angeles	A	2-9-71	34°24'42" N 118°24'00" W	South	104.00	17.80	8.69	39.9	6.6	VII	39	6.82 4.18	1.18 0.4	0.35 0.35	13	Thrust	
T286	El Centro, Imperial Valley Irrigation District	A	10-21-47	32°58'00" N 116°00'00" W	Up	125.00	18.20	12.60	53.70	6.79	3.56			4.78 0.00	0.66 0.79	0.1 0.1	13	Thrust
T287	El Centro, Imperial Valley Irrigation District	A	1-23-51	32°59'00" N 115°44'00" W	North	129.00	21.40	11.60	54.20	7.08	3.15			5.76 10.30 2.30	0.72 1.04 0.82	0.4 0.2 0.2	13	Thrust
T288	El Centro, Imperial Valley Irrigation District	A	6-13-53	32°57'00" N 115°43'00" W	North	58.40	6.22	4.24	46.5	6.5	VII	30		0.67 0.82 0.39	0.30 0.2 0.1	13	Thrust	
T289	El Centro, Imperial Valley Irrigation District	A	11-12-54	31°00'00" N 116°00'00" W	North	46.50	6.05	3.33										
T292	El Centro, Imperial Valley Irrigation District	A	12-16-55	33°01'00" N 115°30'00" W	North	25.10	1.58	0.79										
T293	El Centro, Imperial Valley Irrigation District	A	8-7-66	31°48'00" N 114°30'00" W	North	24.10	3.76	1.95	27.5	5.6	VII	30		0.62 0.74 0.74	0.42 0.42 0.4	16	Thrust	
U294	City Hall, Perdade*		7-6-34	41°2'00" N 124°36'00" W	North	62.50	4.60	2.06	23.5	5.4	VII			0.46 0.46 0.46	0.16 0.16 0.1	16	Strike- slip	
U295	Federal Building Helena, Montana	HR	10-31-35	46°37'00" N 111°58'00" W	North	56.40	5.16	2.19			VII	30		0.46 0.46 0.46	0.12 0.12 0.1	16	Normal	
U297	Helena, Montana, Federal Building	HP	11-20-35	46°37'00" N 111°58'00" W	North	29.30	0.54	0.32	148.1	6.3	VII			0.46 0.46 0.46	0.12 0.12 0.1	16	Thrust or normal	

* The original address of this building, when the instruments were first installed, was 3411 Wilshire Boulevard.
† The original address of this building, when the instruments were first installed, was 3411 Wilshire Boulevard.

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CIT File No.	Reporting Station	(1) Site Classification		(2) Date of Earthquake		(3) Epicenter Location		(4) Instrument Components		(5) Peak Acceleration cm/sec ²		(6) Peak Velocity cm/sec		(7) Peak Displace- ment cm		(8) Epicentral Distance km		(9) Richter Magnitude M		(10) Modified Mercalli Intensity		(11) Approx- imate Record Length sec		(12) Duration (a 2.0-0.05 sec) sec		(13) Period- sec		(14) Focal Depth km		(15) Type of Fault		(16) Reference No.†	
		City Hall, Ferndale	I	2-6-37	40°30'00" N	125°15'00" W	S 45° W	35.90	2.71	0.90	85.1	0.99	1.04	35.9	5.9	VII	15	3.14	0.58	0.24	0.47	0.18	0.66	0.47	0.28								
U298	Santa Barbara Courthouse	A	6-30-41	34°22' N	119°35' W	S 45° E	172.00	21.60	3.74	35.9	5.9	5.9	35.9	5.9	VIII	15	1.54	0.79	0.23	0.35	0.15	0.00	0.33	0.13	0.15	0.35	0.35						
U300	City Hall, Ferndale	I	10-3-42	10°36' N	124°36' W	N 45° W	118.00	6.92	2.95	29.8	6.4	6.4	29.8	6.4	VII	30	0.37	0.45	0.32	0.38	0.15	0.32	0.43	0.35	0.35	0.35	0.35						
U301	Public Library Holister	A	3-9-49	37°06' N	121°18' W	N 89° W	193.00	11.70	1.40	29.3	5.3	VII	30	3.64	0.38	0.29	0.30	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35			
U305	Public Library Holister	A	4-25-54	36°48' N	121°48' W	N 89° W	69.50	3.63	0.96	36.2	5.3	VII	33	0.00	0.51	0.6	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65			
U307	Public Library Holister	A	1-19-60	36°47' N	121°26' W	N 89° W	52.00	4.19	2.24	36.2	5.3	VII	33	0.00	0.51	0.6	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65			
U308	City Hall, Ferndale	I	6-5-60	40°49' N	124°53' W	N 45° W	73.50	3.60	1.18	60.3	5.7	VII	65	4.24	0.34	0.26	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25			
U309	Public Library Holister	A	4-8-61	36°30' N	121°18' W	S 01° W	168.00	10.80	40.0	5.7	VII	30	8.60	0.40	0.32	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35			
U310	Federal Office Building Seattle, Washington	A	4-29-65	47°21' N	122°18' W	S 20° E	52.10	5.59	22.3	6.5	VIII	30	0.76	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27				
U311	Lincoln School Tunnel Taft	A	6-27-66	35°57'18" N	120°29'54" W	N 21° E	8.10	2.10	2.53	130.5	5.6	VII	55	1.63	0.62	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51			
U312	City Hall, Ferndale	I	12-10-67	40°30' N	124°36' W	S 45° W	103.00	11.50	1.76	30.6	5.8	VII	35	0.16	0.72	0.46	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15		
U313	Holister	A	12-18-67	37°00'36" N	121°47'18" W	S 01° W	16.20	1.74	2.26	39.0	5.2	V	60	1.28	0.49	0.67	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63		
U314	Los Angeles Subway Terminal Subbasement	I,A	3-10-33	33°37' N	117°58' W	N 39° E	62.30	17.30	8.21	54.9	6.3	VII	80	1.55	1.5	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59		
U315	Public Utilities Build- ing, Lone Beach	A	3-10-33	33°37' N	117°58' W	South	192.00	29.40	22.70	27.2	6.3	VIII	40	0.96	0.30	0.67	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50		
U316	Public Utilities Build- ing, Lone Beach	A	11-14-41	33°47' N	118°15' W	North	155.00	16.50	11.50	27.0	6.3	VII	20	0.68	0.11	0.79	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22		
U317	Los Angeles Chamber of Commerce Building	A	11-14-41	33°47' N	118°15' W	East	53.60	9.32	3.56	6.2	5.4	VII	20	1.20	0.39	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42		
U318	City Recreation Build- ing, San Luis Obispo	I	11-21-52	35°50' N	121°10' W	S 50° W	23.00	11.90	1.66	2.69	1.00	VII	30	0.76	0.17	0.84	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17		
U319	Southern Pacific Build- ing Basement, San Francisco (Foreschock)	A	3-22-57	37°40' N	122°28' W	N 45° E	2.02	0.28	0.32	16.2	3.8	V	11	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86			

(Continued)

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CIT File No.	Recording Station	(1) Site Classification	(2) Date of Earthquake	(3) Epicenter Location	(4) Instrument Component	(5) Peak- Acceleration cm/sec ²	(6) Peak Velocity cm/sec	(7) Peak Displace- ment cm	(8) Eccentric- ity km	(9) Biaxial Record Length sec	(10) Modified Mercalli Intensity M	(11) Approx- imate Record Duration ($a \geq 0.05 g$) sec	(12) Predomi- nant Period sec	(13) Focal Depth km	(14) Type of Fault	(15) Reference No.†	
V322	San Francisco Building	A	3-22-57	37°39'00" N 122°27'00" W	N 45° S	8.56	0.83	17.3	4.4	45	V	0.61	0.7	0.67	0.4	11	
V323	San Francisco Alexander Building	I	3-22-57	37°59'00" N 122°27'00" W	N 81° E N 09° W	15.60	0.82	0.26	15.60	4.4	V	23	0.33	0.2	0.33	11	
V328	Southern Pacific Build- ing Basement, San Francisco (Aftershock)	A	3-22-57	37°39' N	N 45° E	2.07	0.42	0.38	18.30	4.0	V	20	0.95	0.2	0.63	Strike- slip	
V329	Post House	A	3-18-57	34°07'06" N 119°37'12" W	South	163.00	17.90	4.02	5.4	4.7	VI	45	0.69	0.5	0.64	0.5	
V330	Federal Building Bureau	I	9-4-62	40°58' N	N 70° E	15.30	3.32	1.70	19.0	5.0	VI	70	0.49	0.2	0.35	Strike- slip	
V331	Old State Route (CR) Site, Castro	I	7-15-65	34°29'06" N 118°31'18" W	South	40.40	2.12	0.87	21.2	4.0	V	30	1.22	0.5	0.30		
V332	Sacramento, Pacific Telephone and Telegraph	A	9-12-66	39°24'00" N	South	14.40	1.57	0.74	151.5	6.3	VI	40	0.68	0.2	0.20		
V334	6074 Park Dr. Wheatland	I	9-12-70	34°56'12" N 117°32'24" W	S 65° E S 25° W	139.00	8.89	2.21	13.4	5.4	VI	17	0.40	0.31	0.20		
V335	Cedar Springs, Allen Branch	HR	9-12-70	34°56'12" N 117°32'24" W	S 89° E S 05° W	69.80	5.55	2.42	20.8	5.4	VI	35	0.50	0.22	0.24		
V336	Cedar Springs, Pump House on Dam Aturment Colton	I	9-12-70	34°56'12" N 117°32'24" W	S 65° E S 36° W	94.00	9.63	1.03	1.44	1.00	VI	25	0.37	0.26	0.21		
V338	Hall of Records, San Bernardino	A	9-12-70	34°56'12" N 117°32'24" W	North	113.00	3.18	0.96	1.75	22.9	5.4	VI	35	0.34	0.22	0.24	
V339	Southern California Edison Company Colton	A	9-12-70	34°56'12" N 117°32'24" W	South	57.50	1.06	0.50	1.54	1.15	VI	35	0.27	0.22	0.27		
V342	Millikan Library Base- ment, CIT, Pasadena	A	9-12-70	34°56'12" N 117°32'24" W	North	19.30	1.53	1.74	56.0	5.4	V	24	0.50	0.35	0.35		
V344	J. P. L. Basement Pasadena	I	9-12-70	34°56'12" N 117°32'24" W	South	40.20	2.55	0.95	31.5	5.4	VI	35	0.39	0.33	0.36		
V370	Southern California Edison Company Colton	A	4-8-68	33°11'24" N 116°07'42" W	South	35.30	1.87	0.70	0.72	0.72	VI	81	0.24	0.26	0.21		
V371	Engineering Building Santa Ana, Orange County	A	4-8-68	33°11'24" N 116°07'42" W	S 04° E S 26° W	34.60	2.10	1.07	1.14	1.13	VI	82	0.35	0.34	0.34		
V372	Terminal Island Southern California Edison Plant, Long Beach	A	4-8-68	33°11'24" N 116°07'42" W	N 21° W S 69° W	11.70	0.52	0.52	173.1	6.4	V	24	0.45	0.45	0.45		
V373	J. P. L. Basement Pasadena	A,I	4-8-68	33°11'24" N 116°07'42" W	S 89° E S 05° W	7.35	1.35	0.53	220.3	6.4	VI	30	1.15	0.90	0.77		
						4.89	0.99	0.92					1.27	0.42	0.42		

(Continued)

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CIT File No.	Recording Station	Site Classification	Date of Earthquake	Epicenter Location	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)		(9)		(10)		(11)	
					Particulars	Station	Component	Instrument	Component	North	East	South	West	Up	Down	Up	Down	Up	Down	Up	Down	Up	Down	Up	Down	
Y375	Millikan Basement, CIT Pasadena	A	4-8-68	33°21'12" N 116°01'42" W						9.80	2.20	1.70	212.9	6.4												
Y376	CIT Athenaeum	A	4-8-68	33°21'12" N 116°01'42" W						10.30	2.24	1.84	212.9	6.4												
Y377	Southern California Edison Building, 601 W. 5th St., Los Angeles	A	4-8-68	33°21'12" N 116°01'42" W						6.38	1.14	0.85	212.9	6.4												
Y378	Stoway Terminal Basement, Los Angeles	A,I	4-8-68	33°21'12" N 116°01'42" W						6.99	2.10	2.02	212.0	6.4												
Y379	CMD Building, Vernon	A	4-8-68	33°21'12" N 116°01'42" W						10.00	2.45	1.62	212.0	6.4												
Y380	Hollywood Storage P. E. Lot, Los Angeles	A	4-8-68	33°21'12" N 116°00'42" W						3.81	0.99	1.05	212.0	6.4												
										7.66	2.33	1.98	212.9	6.4												
										11.90	3.08	2.31	212.9	6.4												
										4.12	1.33	1.36	212.9	6.4												
										6.97	2.23	1.07	212.9	6.4												
										11.10	3.07	2.30	212.9	6.4												
										5.41	1.23	1.01	212.9	6.4												
										18.40	4.27	2.50	212.2	6.4												
										18.50	4.65	2.69	212.2	6.4												
										10.90	2.42	2.12	212.2	6.4												
										12.30	3.18	1.38	212.2	6.4												
										4.79	1.11	1.06	212.2	6.4												
										5.1			212.2	6.4												
										1.11			212.2	6.4												

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Appendix B: Site Characteristics

(Courtesy of Trifunac, M. D. and Brady, A. G., "On the Correlation of Seismic Intensity Scales with the Peaks of Recorded Strong Ground Motion," Bulletin, Seismological Society of America, Vol 65, 1975, pp 139-162.)

Rec.	Station Location	Data from Geological Map (with 8 estimates ^a of site classification ^b)			
		U ^c	Ave.	U ^c	Ave.
A001	El Centro (00000001)	Alluvium, several 1000' (00000001)	Quaternary lake deposits (0000010)	-	0
A002	Ferndale City Hall	1500' of Plio-Pleistocene loosely consolidated massive conglomerate, sandstone, and claystone (02111122)	Recent Quaternary alluvium (0000010)	-	1
A005	Santa Barbara	Approx. 600' of Pleistocene cemented alluvium over sand, silt and clay (10101001)	Recent Quaternary alluvium bounded by Quaternary nonmarine terrace deposits (0100011)	-	0
A010	San Jose (Bank of America)	Unconsolidated alluvium and estuarine deposits (00000000)	Recent Quaternary alluvium (0000010)	-	0
A015	San Francisco (Golden Gate Park)	Outcropping of Franciscan chert and thin interbedded shale (22212221)	Recent Quaternary dune sand (0002010)	-	1
A016	San Francisco (State Bldg.)	Dune sand over clay, sand and gravel. 200' to Franciscan bedrock - shale inter- bedded with fine-grained sandstone (10101000)	Boundary of recent Quaternary dune sand, alluvium and Mesozoic ultrabasic intrusive rocks (1111011)	-	1
A017	Oakland City Hall	Approx. 250' of unconso- lidated Quaternary terrace deposits (10101002)	Pleistocene marine and marine terrace deposits (0100111)	-	1
A020	San Diego Light & Power	Shallow alluvium (50-100') over sedimentary rock (0100000)	Recent Quaternary alluvium bonded by Pleistocene marine and marine terrace deposits (0100111)	-	0
B028	Seattle, Washington	Sand, silt, and gravel over blue clay hardpan (10101000)	Narrow strip of recent Quaternary alluvium bounded by Puget Sound and Pleistocene glacial drift: till, outwash, and associated deposits (0100001)	-	0
B031	Taft (Lincoln School)	Quaternary alluvium, sand, and gravel veneer over 200' of consolidated gravel, sand and clay (00101001)	Recent Quaternary, Great Valley fan deposits (0010000)	-	0

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(Continued)

<u>Rec.</u>	<u>Station Location</u>	<u>Abbreviated Site Geology</u>	<u>Data from Geological Map</u>	<u>U</u>	<u>Ave.</u>
B032	Olympia, Washington (Materials Lab. - State Dept. of Hwys.)	Sand and silt fill over recent alluvium - unconsolidated clay, silt, sand, and gravel (0010000)	Pleistocene glacial drift: till, outwash, and associated deposits (0100001)	-	0
B033	Cholame-Shandon #2	Alluvium (00000000)	Recent Quaternary alluvium (00000010)	-	0
B034	Cholame-Shandon #5	Unconsolidated shallow soil and alluvium, overlying Plio-Pleistocene loosely consolidated sand, gravel, silt, and clay (00000000)	Boundary of recent Quaternary alluvium and Plio-Pleistocene nonmarine (0100110)	-	0
B035	Cholame-Shandon #8	Alluvium (00000000)	Recent Quaternary alluvium (00000010)	-	0
B036	Cholame-Shandon #12	Unconsolidated shallow soil and alluvium, overlying Plio-Pleistocene loosely consolidated sand, gravel, silt, and clay (00000000)	Quaternary nonmarine terrace deposits (1100121)	-	0
B037	Tembor	Indeterminate age serpen- ting and hard, severely fractured ultrabasic complex (22222211)	Boundary of Plio-Pleistocene nonmarine and upper Miocene marine (1101121)	-	2
B038	San Luis Obispo (City Rec. Bldg.)	Thin veneer of alluvium and stream gravels over Fran- ciscan sandstone, conglo- merate, and shale (22101022)	Recent Quaternary alluvium (00000010)	-	1
B039	Eureka City Hall	Pleistocene non-marine, loosely consolidated beds of gravel, sand, silt, and clay. Total thickness 200-400' (10100001)	Pleistocene nonmarine deposits (1101121)	-	1
C041	Pacifica Dam, Pacifica	Highly jointed diorite gneiss (22222222)	On the boundary of pre-Cretaceous metamor- phic rocks and Metasomatic granitic rocks: granodiorite (22222222)	-	2
C048	8244 Orion Blvd., L.A.	Alluvium (00000001)	Recent Quaternary alluvium (00000010)	0	0
C051	250 E. First, L.A.	Alluvium (01000001)	Recent Quaternary alluvium (00000010)	0	0

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<u>Rec.</u>	<u>Station Location</u>	<u>Abbreviated Site Geology</u>	<u>Data from Geological Map</u>	<u>U</u>	<u>Avs.</u>
C054	445 Figueroa St., L. A.	Shale (01112102)	On the borders of upper and middle Pliocene marine, and Pleistocene nonmarine sedimentary rocks (1111-21)	1	0*
D056	Castaic	Sandstone (12111112)	Upper Miocene marine sedimentary rock (1111122)	1	1
D057	Hollywood Storage Building, L. A.	700t. of alluvium (00000001)	Pleistocene nonmarine sedimentary rock (111-121)	0	0
D058	Hollywood Storage Building, L. A.	700t. of alluvium (00000001)	Pleistocene nonmarine sedimentary rock (111-121)	0	0
D059	1901 Avenue of Stars, L. A.	Silt and sand layers. Water table at 70-80' (00100000)	Pleistocene nonmarine sedimentary rock (1111121)	0	0*
D062	1640 S. Maringo, L. A.	Pleistocene alluvium. Water level at 35' (00000000)	Pleistocene nonmarine sedimentary rock bordering recent Quaternary alluvium (0111121)	0	0
D065	3710 Wilshire Blvd., L. A.	Alluvium (00000001)	Pleistocene nonmarine sedimentary rock (1111121)	0	1
D068	7080 Hollywood Blvd., L. A.	Alluvium (00000001)	Recent Quaternary alluvium (00000101)	0	0
E071	Wheeler Ridge	Alluvium, 200-300' (10000000)	Recent Quaternary Great Valley fan deposits bordered by Plio-Pleistocene nonmarine sedimentary rock (1101100)	0	0
E072	4680 Wilshire Blvd., L. A.	Alluvium (00000001)	Pleistocene nonmarine sedimentary rock (1111121)	0	1
E075	3470 Wilshire Blvd., L. A.	Alluvium (00000001)	Pleistocene nonmarine sedimentary rock (1111121)	0	0*
E078	L. A. Water & Power, L. A.	Miocene siltstone (01111111)	Border of recent Quaternary alluvium and upper Pliocene marine sedimentary rock (0111011)	1	1
E081	Santa Felicia Dam (Piru)	Sandstone - shale complex (12112112)	Upper Miocene marine sedimentary rock (1111122)	1	1

(Continued)
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Rec.	Station Location	Abbreviated Site Geology	Data from Geological Map		
			U	V	Ave.
E003	3407 Sixth St., L.A.	Alluvium (00000001)	Pleistocene nonmarine sedimentary rock (1111121)	0	0*
F086	Vernon	Greater than 1000' of alluvium. Water table > 300' (00000001)	Recent Quaternary alluvium (0000010)	0	0
F087	Orange County Eng. Bldg., Santa Ana	Alluvium (00000001)	Recent Quaternary alluvium (0000010)	0	0
F088	633 E. Broadway, Glendale	Alluvium (00000001)	Pleistocene nonmarine sedimentary rock (1111121)	0	1
F089	808 S. Olive, L.A.	Alluvium (00000001)	Recent Quaternary alluvium (0000010)	0	0
F092	2011 Zonal, L.A.	Shale at east end of bldg. 8' of fill at west end (01111101)	Upper Miocene marine sedimentary rock bordering on Pleistocene nonmarine (1111121)	1	1
F095	120 N. Robertson, L.A.	Alluvium (00000001)	Recent Quaternary alluvium (0000010)	0	0
F098	646 S. Olive, L.A.	Alluvium (00000001)	Recent Quaternary alluvium (0000010)	0	0
F101	Southern Calif. Edison, Colton	Alluvium > 500' (00000001)	Recent Quaternary alluvium (0000010)	0	0
F102	Fort Tejon, Tejon	Granitic (22222222)	Mesozoic granitic rocks: granite and adamellite, and tonalite and diorite (2222222)	0	2
F103	Pumping Plant, Pearblossom	400' of alluvium over 14,000' of sedimentary rock (10000010)	Recent Quaternary alluvium and Pleistocene nonmarine bordered by Mesozoic granitic rock: granite and adamellite (0100111)	0	0
F104	Oso Pumping Plant, Gorman	Alluvium (10000010)	Pleistocene nonmarine sedimentary rock (1112111)	0	1
F105	U.C. L.A. (Boelter Hall), L.A.	70' of alluvium over 5000' of sedimentary rock (01000000)	On the boundary between Pleistocene nonmarine sedimentary rock and recent Quaternary alluvium (0110111)	0	0
G106	Seis. Lab., C.I.T., Pasadena	Weathered granitic (22122222)	Mesozoic granitic rock: tonalite diorite (2222222)	2	2

(Continued)

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<u>Rec.</u>	<u>Station Location</u>	<u>Abbreviated Site Geology</u>	<u>Data from Geological Map</u>	<u>U</u>	<u>Ave.</u>
G107	Athenaeum, C. L. T., Pasadena	Approx. 1000' of alluvium upon granite (00000000)	Pleistocene nonmarine sedimentary rock (1110121)	0	0
G108	Mulikan Library, C. L. T., Pasadena	Approx. 1000' of alluvium upon granite (00000001)	Pleistocene nonmarine sedimentary rock (1110121)	0	0*
G110	J. P. L., Pasadena	Sandy-gravel (21110011)	Upper Miocene marine sedimentary rock (1111121)	0	1
G112	611 W. Sixth St., L.A.	Alluvium (00000001)	Recent Quaternary alluvium bordered by upper Pliocene marine sedimentary rock (0101011)	0	0
G114	Fire Station, Palmdale	Alluvium (10000001)	Recent Quaternary alluvium (0000010)	0	0
H115	15250 Ventura Blvd., L.A.	Alluvium, water table at 55', (00000000);	Recent Quaternary alluvium (0000010)	0	0
H118	8639 Lincoln, L.A.	Terrace deposits - sand (01110010)	Recent Quaternary dune sand (0000010)	0	0
H121	900 S. Fremont Ave., Alhambra	Few 100 feet of alluvium over siltstone (00100600)	Pleistocene nonmarine sedimentary rock (1111121)	0	0
H124	2600 Nutwood, Fullerton	Alluvium (00000001)	Recent Quaternary alluvium (0000010)	0	0
H128	435 N. Oakhurst, Beverly Hills	Alluvium, water table at 22', (00000000)	Recent Quaternary alluvium (0000010)	-	0
H131	450 N. Roxbury, Beverly Hills	Alluvium (00000001)	Recent Quaternary alluvium (0000010)	0	0
H134	1800 Century Park East, L.A.	Silt and sand layers. Water table at 70-80', (00100001)	Pleistocene nonmarine sedimentary rock bordered by recent Quaternary alluvium (0111111)	0	0
H137	15910 Ventura Blvd., L.A.	Alluvium, water table at 35', (00000001)	Recent Quaternary alluvium (0000010)	0	0
J141	Array Station 1, Lake Hughes	Granitic (222222222)	Mesozoic granitic rocks: granite and adamellite (22222222)	0	2
J142	Array Station 4, Lake Hughes	Weathered granitic (22122222)	Pre-Cambrian metamorphic rocks (gneiss) (22222222)	2	2

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<u>Rec.</u>	<u>Station Location</u>	<u>Abbreviated Site Geology</u>	<u>Data from Geological Map</u>	<u>U</u>	<u>Ave.</u>
J143	Array Station 9, Lake Hughes	Gneiss (22222222)	Pre-Cambrian metamorphic rocks (gneiss) (22222222)	2	2
J144	Array Station 12, Lake Hughes	Eocene sandstone below a shallow (10') layer of alluvium (12112112)	Paleocene marine sedimentary rock (11122222)	0	1
J145	15107 Vanowen St., L.A.	Alluvium 500', water table at 70' (00000001)	Recent Quaternary alluvium (0000010)	0	0
J148	616 S. Normandie Ave., L.A.	Alluvium. Siltstone at 25' (01110000)	Border of recent Quaternary alluvium and Pleistocene nonmarine sedimentary rock (0111011)	0	1
L166	3838 Lankershim Blvd., L.A.	Interlayered soft sandstone and shale (01111101)	Border of upper Miocene and recent Quaternary alluvium (0101011)	0	1
L171	Southern Calif. Edison, San Onofre	Lightly cemented Pliocene sandstone, > 325' depth (02111111)	Tertiary marine sedimentary rock bordered by Pleistocene marine and marine terrace deposits (11121111)	1	1
M176	1150 S. Hill St., L.A.	500' of gravelly sand over shale (00110000)	Recent Quaternary alluvium (0000010)	0	0
M179	Tehachapi Pumping Plant, Grapevine	15' of alluvium over gneiss (22112010)	On the boundary of Oligocene nonmarine and recent Quaternary Great Valley fan deposits, and bounded by Eocene marine and Mesozoic granitic rocks: tonalite and diorite (1102111)	2	1
M180	4000 W. Chapman Ave., Orange	Alluvium > 300' over shale (00000001)	Recent Quaternary alluvium (0000010)	0	0
M183	6074 Park Drive, Wrightwood	Alluvium veneer on igneous metamorphic complex (22112012)	Recent Quaternary alluvium bordered by pre- Cambrian igneous and metamorphic rock complex (0102110)	2	1
N185	Carbon Canyon Dam, Brea	Thin alluvium over poorly cemented siltstone (01111012)	Narrow strip of recent Quaternary alluvium between upper Pliocene marine sedimentary rock (0101111)	1	1
N186	Whittier Narrows Dam, Whittier	More than 1000' of alluvium (00000001)	Recent Quaternary alluvium (0001010)	-	0
N187	San Antonio Dam, Upland	Up to 150' of alluvium over granitics (20001010)	Recent Quaternary alluvium bordered by Pleistocene nonmarine sedimentary rock (0101010)	-	0

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<u>Rec.</u>	<u>Station Location</u>	<u>Abbreviated Site Geology</u>	<u>Data from Geological Map</u>	<u>U</u>	<u>Ave.</u>
N188	1880 Century Park East, L. A.	Silt and sand layers. Water table at 70-80', (00110000)	Pleistocene nonmarine sedimentary rock bounded by recent Quaternary alluvium (011111)	0	0
N191	2516 Via Tejon, Palos Verdes Estates	Shallow Pleistocene sand over shale-volcanic complex (2111001)	Narrow strip of Quaternary nonmarine terrace deposits between upper Miocene marine and middle Miocene sedimentary rocks (1101111)	1	1
N192	2500 Wilshire Blvd., L. A.	Alluvium. Siltstone at 20-30'. Water table at 35', (01100000)	Pleistocene nonmarine sedimentary rock (1111121)	0	1
N195	San Juan Capistrano	Alluvium (00000001)	Recent Quaternary alluvium (0000010)	0	0
N196	Long Beach State College, Long Beach	Unconsolidated silt-sand-clay (00100000)	Quaternary nonmarine terrace deposits bordering recent Quaternary alluvium (0100110)	0	0
N197	Anza Post Office, Anza	Alluvium (10000011)	Recent Quaternary alluvium, bordered by pre-Cenozoic granitic and metamorphic rocks (0100110)	-	0
O198	Griffith Park Observatory, L. A.	Granitic (22222222)	Mesozoic granitic rock bordered by Miocene volcanic (22222222)	2	2
O199	1625 Olympic Blvd., L. A.	Alluvium (00000001)	On an approximately located contact between Pleistocene nonmarine sedimentary rock and recent Quaternary alluvium (0011011)	0	0
O204	205 W. Broadway, Long Beach	Alluvium. Water table at 15'. (00000000)	Quaternary nonmarine terrace deposits (1100110)	0	0
O205	Terminal Island, Long Beach	Alluvium. Water table < 20'. (00000000)	Recent Quaternary alluvium (0000010)	0	0
O206	Hall of Records, San Bernardino	Alluvium - 1000'. Water table at 30'. (00000001)	Recent Quaternary alluvium (0000010)	0	0
O207	Fairmont Reservoir, Fairmont	Granitic (22222222)	Mesozoic granitic rock: granite and adamellite, bordered by Pleistocene nonmarine sedimentary rock (22222222)	2	2
O208	University of Calif., Santa Barbara	Alluvium veneer over sandstone (12111011)	Quaternary nonmarine terrace deposits (1001110)	0	1
O210	Fire Station, Hemet	Alluvium (00000001)	Recent Quaternary alluvium (0000010)	-	0

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<u>Rec.</u>	<u>Station Location</u>	<u>Abbreviated Site Geology</u>	<u>Data from Geological Map</u>	<u>U</u>	<u>Ave.</u>
Q213	1215 Gallery, Hoover Dam	Several 100' of volcanic breccia over basalt (22211222)	Cretaceous volcanic rocks, predominantly andesitic flows and tuffs (2122222)	-	2
P214	4867 Sunset Blvd., L. A.	Shallow alluvium over Miocene siltstone (01101010)	Pleistocene nonmarine bordered by upper Miocene marine sedimentary rocks (1101121), (111121)	0	1
P217	3345 Wilshire Blvd., L. A.	Alluvium (00000001)	Pleistocene nonmarine sedimentary rock (111121)	0	0 ⁴
P220	666 W. 19th St., Costa Mesa	Terrace deposits (01110012)	Quaternary nonmarine terrace deposits (1100120)	0	1
P221	Santa Anita Reservoir, Arcadia	Granite diorite complex (22222222)	Mesozoic granitic rocks: tonalite and diorite (22222222)	2	2
P222	Navy Lab., Port Hueneme	Alluvium > 1000' (00000001)	Recent Quaternary alluvium (0000010)	0	0
P223	Puddingstone Reservoir, San Dinae	Volcanic clastics and intrusions with associated shales (12121212)	Miocene volcanic rock, bordered by Pleistocene nonmarine sedimentary rock (2121122)	1	2
P231	9841 Airport Blvd., L. A.	Alluvium (00000001)	Quaternary nonmarine terrace deposits (1100120)	0	0
Q233	14724 Ventura Blvd., L. A.	Alluvium (00000001)	Recent Quaternary alluvium (0000010)	0	0
Q236	1760 N. Orchid Ave., L. A.	Alluvium (00000001)	Recent Quaternary alluvium bordered by middle Miocene marine sedimentary rock (0101010)	-	0
Q239	9100 Wilshire Blvd., L. A.	Alluvium. Water table at 40' (00000000)	Recent Quaternary alluvium (0000010)	-	0
Q241	800 W. First St., L. A.	Pliocene siltstone (01111101)	On the boundary of upper Miocene marine, middle and/or lower Pliocene marine, and recent Quaternary alluvium (0101011)	1	1
R244	222 Figueroa St., L. A.	25' of alluvium over shale. Water at 20' (01101000)	On the boundary of upper Miocene marine, middle and/or lower Pliocene marine, and recent Quaternary alluvium (0000010)	0	1 ⁴
R246	6464 Sunset Blvd., L. A.	Alluvium. Water table at 55' (00000000)	Recent Quaternary alluvium (0000010)	0	0

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(Continued)

<u>Rec.</u>	<u>Station Location</u>	<u>Abbreviated Site Geology</u>	<u>Data from Geological Map</u>	<u>U</u>	<u>Ave.</u>
R248	6430 Sunset Blvd., L. A.	Alluvium. Water table at 55', (0000000)	Recent Quaternary alluvium (0000010)	0	0
R249	1900 Avenue of the Stars, L. A.	Silt and sand layers. Water level at 70', (00110000)	Pleistocene nonmarine bordered by Pleistocene marine and marine terrace deposits (0101110)	0	0
R251	234 S. Figueroa St., L. A.	25' of alluvium over shale. Water at 20' (01101000)	On the boundary of upper Miocene marine, Pleistocene nonmarine and middle and/or lower Pliocene marine sedimentary rock (0111121)	0	1
R253	533 S. Fremont Ave., L. A.	Alluvium (00000001)	On the boundary of Pleistocene nonmarine sedimentary rock and recent Quaternary alluvium (0111011)	0	0
S255	6200 Wilshire Blvd., L. A.	Thin layer of alluvium over asphaltic bands (0110000)	Pleistocene nonmarine sedimentary rock (1111121)	1	1
S258	3440 University Ave., L. A.	400' of alluvium over clay and shale. Water table at 375', (0000000-)	Recent Quaternary alluvium (0000010)	0	0
S261	1177 Beverly Dr., L. A.	Alluvium (00000001)	Pleistocene marine and marine terrace deposits (0100110)	0	0
S262	5900 Wilshire Blvd., L. A.	Alluvium - asphaltic bands (01000001)	Pleistocene nonmarine sedimentary rock (1111121)	1	1
S265	3411 Wilshire Blvd., L. A.	Siltstone. Water table at basement level (0111101)	Pleistocene nonmarine sedimentary rock (1111121)	1	1
S266	3550 Wilshire Blvd., L. A.	Alluvium. Water table at 35', (0000000)	Border of Pleistocene non-marine sedimentary rock and recent Quaternary alluvium (0111111)	0	0
S267	5260 Century Blvd., L. A.	Alluvium (00000001)	Quaternary nonmarine terrace deposits (1100120)	0	0
U297	Helena, Montana (Federal Building)	Limestone bedrock (22222122)	Cambrrian, bordering with pre-Cambrian Helena limestone, and Tertiary and Quaternary sedimentary deposits (1212121)	-	2

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(Continued)

<u>Rec.</u>	<u>Station Location</u>	<u>Abbreviated Site Geology</u>	<u>Data from Geological Map</u>	<u>U</u>	<u>Ave.</u>
U313	Hollister	Recent unconsolidated alluvium over partly consolidated gravels, and well consolidated marine sandstone and shale. Water table from 85-95' (00100000)	Boundary of Pleistocene River terrace deposits and recent Quaternary alluvium (0100011)	-	0
V317	L. A. (Chamber of Commerce)	Alluvium veneer over late Tertiary unconsolidated marine sediments (01101011)	Recent Quaternary alluvium (0000010)	-	0
V322	San Francisco (So. Pacific Building)	Sand fill over clay, sand, and gravel, 285' to Franciscan bedrock-sandstone and shale (10100000)	Boundary between recent Quaternary alluvium, dune sand and the Franciscan Formation (Jurassic-Cretaceous) (0110011)	-	0
V323	San Francisco (Alexander Bldg.)	Sand and clay over thin bedded shale and sandstone (10100000)	Boundary between recent Quaternary alluvium, dune sand and the Franciscan Formation (Jurassic-Cretaceous) (0111011)	-	1
V329	Port Hueneme	Coarse grained sand and gravel veneer over fine grained silt and clay (00110000)	Recent Quaternary alluvium (0000010)	0	0
V332	Sacramento (Pacific Telephone & Telegraph)	Approx. 40' of inorganic, clayey silt over consolidated sand, gravel, and silt. 8000' to basement rock (00100001)	Recent Quaternary Great Valley fan deposits (0000000)	-	0
W335	Cedar Springs, Allen Ranch	Granitic (2222222)	Mesozoic granitic rocks - tonalite and diorite (2222222)	2	2
W336	Cedar Springs, Pump house on Dam abutment	Shallow gravelly alluvium (2210102)	On the boundary of Mesozoic granitics, Pleistocene 1 nonmarine and Quaternary alluvium (1112111)	1	1
Y377	So. Calif. Edison Bldg. (L. A.)	30' of alluvial clay, silt, and sand overlying 365' of Upper Pliocene blue clay (01100000)	Narrow strip of recent Quaternary alluvium bordering with Pleistocene nonmarine, upper Miocene marine and middle and/or lower Pliocene deposits (0101001)	-	0
Y378	Subway Terminal Bldg. (L. A.)	Alluvium veneer over late Tertiary marine sediments (01100012)	Recent Quaternary alluvium bordering with upper Pliocene marine deposits (0101011)	-	0

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(Continued)

¹ Modified site classifications of Duke et al (1972).

² Estimates in parentheses by staff members of Earthquake Engineering Research Laboratory.

³ 0, 1, and 2 correspond to soft, intermediate, and hard sites (see text).

⁴ Adjustments made to classification to ensure consistency across small geographical areas.

In accordance with letter from DAEN-RDC, DAEN-ASI dated 22 July 1977, Subject: Facsimile Catalog Cards for Laboratory Technical Publications, a facsimile catalog card in Library of Congress MARC format is reproduced below.

Chang, Frank K

State-of-the-art for assessing earthquake hazards in the United States; Report 9: Catalogue of strong motion earthquake records; Vol. I: Western United States, 1933-1971 / by Frank K. Chang. Vicksburg, Miss. : U. S. Waterways Experiment Station ; Springfield, Va. : available from National Technical Information Service, 1978.

28, 13, 12 p. : ill. ; 27 cm. (Miscellaneous paper - U. S. Army Engineer Waterways Experiment Station ; S-73-1, Report 9, v.1)

Prepared for Office, Chief of Engineers, U. S. Army, Washington, D. C.

References: p. 4.

1. Earthquake engineering. 2. Earthquake hazards. 3. Earthquakes. 4. Ground motion. 5. State-of-the-art studies. I. United States. Army. Corps of Engineers. II. Series: United States. Waterways Experiment Station, Vicksburg, Miss. Miscellaneous paper ; S-73-1, Report 9, v.1. TA7.W34m no.S-73-1 Report 9 v.1